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JOHN L. FARLEY, DIRECTOR

COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BRANCH OF COMMERCIAL FISHERIES

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Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Director, Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C.

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COVER: This scene was made during the annual Biloxi Shrimp Festival which features the Blessing of the Fishing Fleet, a symbolic and religious ritual inherited with other European customs. The 1956 event will be staged on Saturday and Sunday, July 28-29, 1956. Biloxi is one of the important shippers of shrimp and oysters in the United States. Hundreds of boats and several thousand workers are employed in the picturesque shrimp and oyster industries at Biloxi, Miss., on the Gulf of Mexico.

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CORRECTION: March 1956 issue: In the listings under "RESEARCH IN SERVICE LABORATORIES," the one on "Mid-Water Status of Southern Oyster Research," should have read: "Mid-Winter Status of Southern Oyster Research."

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COMMERCIAL FISHERIES REVIEW

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INSURANCE OF FISHING VESSELS: SOME CURRENT PROBLEMS

By Jerome Sachs*

BACKGROUND

Generally speaking, the commercial fishing vessel insurance problem is the problem of safety at sea as viewed from the standpoints of the fishing vessel owner wanting to be insured and of the insurance company being asked to supply the insurance. The insurability of a commercial fishing vessel depends not only on the seaworthiness of the vessel but also on whether or not the crew is "seaworthy." Such considerations are involved as the design and structure of hulls; the installation and maintenance of equipment for safe navigation, for fire fighting, and lifesaving; the conduct and qualifications of the crew, etc.

Table 1 - Fishing Vessel Hull Insurance, 1946-54 (Gross Premiums, Losses Paid, and Ratio of Losses Paid to Gross Premiums)

Year	Gross Premiums Less Returns	Losses Paid Less Salvage	Ratio
	$	$	%
1954 1/	633,523	511,840	80
1953	629,057	526,045	83
1952	601,696	816,884	135
1951	833,447	466,871	56
1950	706,609	417,603	58
1949	637,929	562,150	88
1948	592,970	322,589	54
1947	358,028	268,398	70
1946	307,848	176,532	57

1/ The losses estimated and still outstanding and unpaid as of December 31, 1954, were reported to be $320,847. If one adds this loss reserve figure to the losses actually paid out during 1954 amounting to $511,840, the ratio of losses (incurred) to premiums is 131 percent.

Note: These figures, which were made available by one insurance company, are a recapitulation of fishing vessel Hull-insurance statistics covering a 9-year period (1946-1954). The region included extends from the Gulf to New England, from Brownsville, Tex., to Eastport, Me.

In recent years the experience of insurance companies in their commercial fishing vessel business has been discouraging and caused many of them to get out of the market and others to keep out. Rising costs have beset the fishing industry as regards construction of vessels, repairs to vessel, fishing gear and nets, fuel, wages to crew, etc. Furthermore, court awards in personal injury claims have sharply increased. Both the rise in costs and the increase in awards are reflected in the increased claims that insurance companies have been called upon to pay. The few insurance companies which have remained in the market have reportedly raised their premiums, increased the use of deductibles, and imposed more restrictive coverage. The vessel owners affected are complaining that the insurance coverage has become inadequate and its cost prohibitively expensive.

This general situation of restricted coverage and increased insurance cost to the vessel owners, and of increasing reluctance on the part of insurance companies to provide the needed protection, has become acute within the fishing industry, both from an economic and a humanitarian standpoint.

The Federal Government, as part of its program of aiding the American fishing industry through research and development, is financing a nationwide survey of

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Note 1: An address delivered at the Annual Meeting of the Virginia Fishermen's Association, Hotel Chamberlin, Old Point Comfort, Va., on February 7, 1956.

Note 2: Also see Commercial Fisheries Review, December 1955, p. 35; August 1955, p. 33.

the problem. I am referring, of course, to the survey being conducted at the present time as to the reasons why so many commercial fishing vessels can no longer obtain insurance coverage on their operations at rates they consider reasonable in terms of their total operating costs, their volume of sales, etc. This survey is being conducted by the Bureau of Business Research in Boston University, in cooperation with the Fish and Wildlife Service of the U. S. Department of the Interior. The results of this survey will not be completed until 1957.

My limited aim in this article will be to offer some comments on certain aspects of the insurance problem and to present some personal current impressions. These comments, for the most part, will be in general terms and not specifically pointed to the different geographical areas or classes of vessels. My work has been in the insurance field generally, not specialized in the insurance of fishing vessels, and it is this general insurance background and experience that I am bringing to bear on the material I have read and on what I have learned from the insurance companies regarding the insurance of these vessels.

COMMERCIAL FISHING VESSEL INSURANCE STATISTICS

Statistics on commercial fishing insurance are not readily obtainable because, among other reasons, the insurance companies have not separated out for publication the fishing vessel figures from their marine figures generally. Nevertheless, I have been able to obtain some insurance company figures showing premiums and

Table 2 - Fishing Vessel Hull Insurance by Class of Vessel, 1946-54 (Gross Premiums, Losses Paid, and Ratio of Losses Paid to Gross Premiums)

Class	1954			1953			1952			1951		
	Premiums	Losses	Ratio	Premiums	Losses	Ratio	Premiums	Losses	Ratio	Premiums	Losses	Ratio
	$	$	%	$	$	%	$	$	%	$	$	%
Menhaden:												
Marine	211,201	89,468	42	180,963	103,327	57	169,854	17,199	10	176,312	22,660	13
Fire	-	-	-	-	-	-	-	-	-	300	-	-
Auxiliary Schooners:												
Marine	324,830	329,752	102	328,490	301,979	92	267,790	345,121	129	260,431	110,630	42
Fire	-	-	-	-	-	-	-	-	-	26	-	-
Trawlers:												
Marine	19,983	8,464	42	23,775	7,472	31	25,907	7,367	28	23,038	41,470	180
Fire	-	-	-	31	-	-	1,135	-	-	-	-	-
Miscellaneous:												
Marine	46,410	47,061	101	91,841	66,111	72	18,508	53,618	291	43,431	17,861	41
Fire	128	4,554	3,557	1,122	-	-	705	-	-	684	-	-
Shrimp and Sponge, Diesel:												
Marine	28,880	32,985	80	934	46,012	4,926	95,074	356,258	377	322,907	268,552	83
Fire	1,003	9,500	583	1,244	81	7	1,931	8,057	417	2,537	66	2.6
Shrimp and Sponge, Gas:												
Marine	-	36	-	19	406	2,136	227	23,881	10,520	3,066	5,623	183
Fire	488	-	-	638	647	101	566	3,183	562	725	-	-
Totals:												
Marine	631,304	497,786	79	626,022	525,307	84	579,360	805,644	135	629,175	466,805	56
Fire	2,219	14,054	716	3,035	728	25	4,327	11,240	260	4,272	66	1.5

Class	1950			1949			1948			1947			1946		
	Premiums	Losses	Ratio	Premiums	Losses	Ratio	Premiums	Losses	Ratio	Premiums	Losses	Ratio	Premiums	Losses	Ratio
	$	$	%	$	$	%	$	$	%	$	$	%	$	$	%
Menhaden:															
Marine	161,642	20,019	12	168,785	73,629	44	136,822	52,749	39	83,245	17,000	20	69,867	9,217	13
Fire	333	-	-	1,485	-	-	84	-	-	-	-	-	105	-	-
Auxiliary Schooners:															
Marine	200,204	168,413	84	216,234	340,419	157	212,141	161,483	76	146,461	133,094	91	126,383	69,030	55
Fire	-	-	-	-	-	-	375	-	-	-	-	-	-	-	-
Trawlers:															
Marine	42,044	24,306	58	45,185	28,432	63	81,741	41,889	51	74,707	98,719	132	75,735	88,906	117
Fire	849	-	-	346	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous:															
Marine	48,092	4,357	9	32,881	16,551	50	14,127	378	3	8,193	3,162	39	3,978	2,027	51
Fire	1,011	-	-	485	-	-	2,426	-	-	3,478	5,175	149	3,530	1,793	51
Shrimp and Sponge, Diesel:															
Marine	244,989	179,497	73	164,513	99,136	60	134,038	54,193	40	28,250	8,583	30	17,567	5,492	31
Fire	3,657	9,174	251	3,950	734	25	4,186	245	6	6,536	114	1.7	6,598	-	-
Shrimp and Sponge, Gas:															
Marine	2,261	4,075	180	3,517	3,251	92	6,118	2,658	43	4,529	2,546	56	1,138	-	-
Fire	1,527	7,763	508	1,654	-	-	913	8,995	986	2,639	-	-	3,957	65	1.6
Totals:															
Marine	699,232	400,667	57	631,115	561,418	89	584,987	313,349	54	345,385	263,109	76	293,658	174,674	59
Fire	7,377	16,936	230	6,814	732	11	7,983	9,240	115	12,643	5,289	42	14,190	1,858	13

Note: Sources of these figures, the same as in table 1.

losses which are presented in the statistical tables. These figures shed light on the marine insurance industry's lack of enthusiasm for the fishing vessel business over-all. However, I should like to add that from these figures it appears that in the case of menhaden fishing vessels, the underwriting losses over the last few years have been clearly better than the losses suffered on other classes of fishing vessels. It appears evident that in the accident prevention field, compared to other classes of fishing vessels, menhaden vessel owners have been doing a good job.

Some figures dug out of Government records also bear illuminatingly on the losses revealed in the tables of insurance company figures. For example, about one-fourth to one-third of all of the more important cases of assistance rendered by Coast Guard operational units to all types of vessels in all sizes are estimated to have involved assistance to commercial fishing vessels. About one-half of the fishing vessels assisted by the Coast Guard in 1955 were above 30 tons burden or above 40 feet in length.

CAUSES OF ACCIDENTS

What are the causes of accidents among commercial fishing vessels? The Government reports on accidents are not sufficiently detailed to determine the exact causes of the founderings, strandings, fires, collisions, etc. A very rough estimate of the situation places a range of about one-fourth to one-third of the accidents as due to undetermined causes; somewhat less than one-fourth of the causes are attributed to heavy weather; a range of about one-half to two-thirds are attributed to personnel and material failures.

LOSS-OF-LIFE RATE

How does the loss-of-life rate among fishing vessels compare with the loss-of-life rates in other occupations? In table 3 the loss-of-life rate for persons employed on commercial fishing vessels was estimated on the basis of the total loss of life over an 8-year period which occurred on fishing vessels as a result of marine accidents, divided by the number of persons estimated to have been employed on fishing vessels. The loss-of-life rates for the seamen serving on United States commercial vessels subject to inspection by the Coast Guard were arrived at in similar manner, by using figures collected during the past 3 years. In each case the figures should be accepted as estimates based on the best available information. The estimated rates were furnished by the Bureau of Labor Statistics and the Coast Guard.

Table 3 - Loss-of-Life Rate For Persons on Commercial Fishing Vessels

Industry	Loss of Life Per Total Employed
Fishermen on commercial vessels	1/1,000
Seamen on inspected vessels	1/1,800
Mining (industry-wide)	1/1,100
Coal mining	1/760
Logging	1/680
Construction workers	1/1,300
Agricultural workers	1/1,700
Steel-mill workers	1/6,000
Manufacturing workers	1/8,400

The comparisons in table 3 tend to lend some support to the conclusion that where emphasis has been placed on safety programs, as it has been in the large industrial organizations, loss of life can be held down even though a particular operation may be of a hazardous nature. Other factors contributing to the high loss of life on commercial fishing vessels come readily to mind, such as the inaccessibility to medical help at sea, etc.

HULL INSURANCE

So far as I have been able to discover, what remains of a fishing vessel Hull insurance market for the whole East Coast, Gulf, and Pacific Coast, is being supplied by four insurance companies. A number of other insurance companies have been in and out of the business during the last few years because of discouraging results. Some insurance companies have continued to supply the coverage in specific cases, despite their reluctance to do so. However, the granting of coverage in such cases is to be regarded as testimony to the skill and resourcefulness of the brokers representing the vessel owners concerned, as well as evidence that these

brokers were probably producing other unrelated business for those insurance companies that was turning out to be profitable.

P & I INSURANCE

There are, at present, I believe, four available Protection and Indemnity (P & I) markets in the United States. Of these, only two write P & I on fishing vessels, but both have pulled out of the New England area. I understand that until recently the P & I market in New England was being supplied by two British insurance companies. Because of persistently bad-loss experience despite what appeared to be a stiff premium rate, one of the two has just pulled out and as of today there is only one British insurance company writing P & I in New England. Again, it should be observed that other insurers, American companies, do have a little P & I in New England written in specific cases as a special favor, etc. But the one insurance company holding itself out as ready and willing to provide "at a price" P & I coverage in New England is one British insurance company.

Turning to the Gulf, the P & I business despite a fairly high accident frequency rate has not, I gather, been bad because claim settlements have been more modest than they are elsewhere. Actually, the P & I loss experience on the Gulf has been better than the Hull, and virtually every insurance company writing P & I on fishing vessels seemingly has a little of this business on the Gulf.

PREMIUM RATES

The operations of insurance companies are regulated by the separate states. However, determining the amount of premium to charge in the case of marine insurance is not regulated but is left to the insurance companies themselves. There is no manual of rates, no statistical rating plan based on a classification or register of fishing vessel risks, to which one can refer to find out what the premium rate will be for a vessel in accordance with class, age, and physical characteristics. It is a matter of negotiation between the vessel owner's broker and the insurance company. In fixing the premium rate, what are the considerations that are taken into account?

First of all the insurance company takes into account its general experience with regard to the class of vessel which the insurance is to cover, as well as the particular area or areas in which the applicant vessel owner will be doing his fishing. Some insurance companies, with their losses in recent years in mind, are now insisting on a complete physical survey of the vessel by a marine surveyor. The survey made also covers navigation, fire fighting, and lifesaving equipment.

The vessel owner's loss record and standing are also taken into consideration. The bad experience of recent years has caused some insurance companies to include a check on the financial standing of the vessel owner. Such matters are gone into as whether the venture is or has been making money, whether the vessel owner is paying his maintenance bills on a current basis, how the vessel is mortgaged, etc. These inquiries have on occasion included checking also on the general reputation of the operating personnel.

Some insurance companies give rate deductions to a fleet based on the number of vessels in the fleet. Other insurance companies do not give so-called fleet credits right off but prefer to let a fleet earn such credits by good experience. Some insurance companies are tending to be increasingly wary of fleet operations in rating vessels. They feel that a number of them are really a loose community of single-vessel ownerships banding together to form a fictitious fleet with the aim of getting preferred rating.

In a case where the insurance company being asked to provide the coverage is not really in the market for the business, but is being pressured by the vessel owner's broker, the broker's general record of premiums and losses on the total business brought by him into the insurance company is also weighed.

With the recent losses in mind, there has been some feeling within the insurance industry that the so-called American Institute Time Hull Form, which is used for large oceangoing tonnage, is not a restricted enough form for small fishing vessels and that it was never designed for small tonnage.

PERSONAL FACTORS TO BE CONSIDERED

From what I have said thus far about the procedures used by insurance companies in determining whether or not to insure and the premium rate to charge, it should be apparent that the character, habits, and mental attitude of the vessel owner and crew--the personal factors--are just as important as the physical nature of

Table 4 - Fishing Vessel Hull Insurance by Class of Vessels, Cumulative Totals for 1946-54

Class	Premiums	Losses Paid	Paid-Loss Ratio	Reserve for Losses Outstanding as of December 31, 1954	Incurred Losses	Incurred-Loss Ratio
	$	$	%	$	$	%
Menhaden:						
Marine	1,357,691	405,276	29	112,850	518,126	38
Fire	2,307	-	-	-	-	-
Auxiliary Schooners:						
Marine	2,102,963	1,959,921	93	187,605	2,147,526	102
Fire	411	-	-	-	-	-
Trawlers:						
Marine	412,115	347,027	84	9,200	356,227	86
Fire	2,245	-	-	-	-	-
Miscellaneous:						
Marine	307,461	211,326	68	11,092	222,418	72
Fire	13,569	11,522	84	-	11,522	84
Shrimp and Sponge, Diesel:						
Marine	1,037,152	1,042,713	100.5	-	1,042,713	100.5
Fire	31,232	27,979	89	-	27,979	89
Shrimp and Sponge, Gas:						
Marine	20,865	42,496	203	-	42,496	203
Fire	13,096	20,652	157	100	20,752	157
Totals:						
Marine	5,238,247	4,008,759	76	320,747	4,329,506	83
Fire	62,860	60,153	95	100	60,253	95

Note: Totals of data in table 2.

the risk. The fact that the vessel will stay afloat is not enough. In evaluating a risk the mental attitudes of the vessel owner and crew are of crucial importance. This aspect of the risk is not limited to the personal or business ethics of the owner and crew, or to dishonesty on their part. Carelessness, which is a matter of mental attitude, most decidedly contributes to a risk and yet does not involve either business ethics or dishonesty.

Let us run over quickly some types of personal conduct and attitudinal factors that make a vessel an unattractive risk to the insurance companies. These include such factors as poor seamanship and poor shipkeeping; carelessness in equipment maintenance; failure on the part of the captain, mate, and engineer to spend more time on safety matters in sessions with the crew, especially at the beginning of the fishing season; failure to train new men in the handling of the purse boat and other small auxiliary craft; maintaining the decks in bad condition; permitting overloaded or poorly-insulated circuits; using gasoline in wood-burning stoves to get fires going more quickly in cold weather; failure to check fuel tanks periodically against leaks; smoking in the engineroom where a gas engine is in operation; discharging

crankcase oil into the bilges, thus increasing the fire hazard; using all personnel on the vessel to help bring in the net, leaving no one on watch in the engineroom; allowing drunks to get on board; venturing out too far looking for new fishing banks considering the size of the vessel and its equipment; staying out until the last moment despite weather conditions, etc.

The list could obviously be extended. The point is that these are the kinds of personal factors that make for injuries, for destruction, and loss of vessels, and thereby for increased losses to the insurance companies.

CAREFUL MEN ARE GOOD INSURANCE RISKS

The nature of insurance is such that it requires the utmost good faith between the parties. The so-called Sue and Labor Clause which appears in every marine insurance policy means in substance that in dealing with an accident or with a loss, the insured vessel owner should act as if he were uninsured. Insurance companies like their policyholders to be not only men of good faith but cautious and careful. It has been said that the best safety device after all is a careful man. Insurance underwriters may be pleasurably excited by risks and chances taken in the movies or on television, but when they catch on to the fact that a policyholder of theirs has a habit of taking unnecessary chances, the show is over; they prefer to let him gamble with his own money and not with the insurance company's.

Table 5 - Fishing Vessel Protection and Indemnity Insurance, 1950-54

Year	Gross Premiums Less Returns	Losses Paid Less Salvage	Paid-Loss Ratio	Reserves for Outstanding Losses as of December 31, 1954	Incurred Losses	Incurred-Loss Ratio
	$	$	%	$	$	%
1954	72,797	6,507	9	30,900	37,407	51
1953	68,250	19,797	28	15,800	35,597	52
1952	47,286	45,814	96	23,800	69,614	149
1951	89,101	69,634	79	9,900	79,634	89
1950	85,873	88,141	102	-	88,141	102
Totals	363,307	229,893	63	80,400	310,393	85

Note: These figures, made available by an insurance company, are a recapitulation of fishing vessel P & I insurance statistics covering a 5-year period (1950-1954). While the region included under these figrures extends from the Gulf to New England, about 90 percent is estimated to represent menhaden vessels.

The life of a fisherman is a rough one. It draws courageous and self-confident men; rugged individualists who think of themselves as lone operators and able to take care of themselves in any situation; men with a strong streak of fatalism in their characters. However, men of this kind tend frequently to be disdainful of precaution and to carry around deep within themselves the feeling that it is demeaning ("chicken") to worry about safety--and a waste of time to pay attention to accident-prevention procedures. Therefore, solving the insurance problem becomes for the fishing industry the problem of getting men with these character traits to observe safety precautions persistently and continuously. It is the problem of getting these men to view accident-prevention procedures and equipment on the boat as an essential and integral part of the boat's successful operation, not just as something "extra." Accidents on a vessel not only affect its insurance rate but have an unmistakable and large bearing on the fishing vessel's efficiency.

MEASURES NEEDED TO INSURE SAFETY

The practical question which those interested in the general welfare of the fishing industry (and more specifically in its insurance difficulties) have to face up to is what should be done to get vessel owners to maintain the vessel, its fixed equipment, and safety equipment in as good condition, let us say, as the fishing gear. What courses of action should be taken in an effort to reduce accidents and thereby the losses of insurance companies? Are corrective regulatory safety measures needed? What should be done to keep down court awards in personal-injury actions by members of the crew?

One suggestion that has been made is that Congress should take fishermen out of the Jones Act and enact a fishermen's compensation act to parallel the workmen's compensation legislation that governs the amounts paid for death and injuries to workmen in industrial plants on shore. This would be a statutory approach to fixing a ceiling on amounts paid for death and injuries to fishermen.

Another method for dealing with the problem that has been mentioned is that commercial fishing vessels should be made subject to Government construction and maintenance standards with periodic inspection and certification by recognized surveyors, and that seagoing personnel on fishing vessels should also be made subject to official qualification standards. The aim of these official standards would be to see to it that the commercial fishing vessel is seaworthy, properly equipped for safe navigation, properly equipped with fire-fighting apparatus and lifesaving gear, and properly manned. This course of action would have fishing vessels made subject to the same regulations, more or less, as passenger and cargo vessels.

At present, fishing vessels are subject only to the requirements of the Motorboat Act administered by the Coast Guard. Those motorboat regulations are limited to requiring compliance with certain regulations concerning navigation lights, fire extinguishers, and lifejackets and apply to all motorboats under 150 tons which are not licensed to carry passengers. These regulations have nothing to do with the design and construction of fishing craft. The inspections are not periodic but of a spot-check character. In sum total, these regulations are the same as those which apply to small pleasure craft although the Motorboat Act also contains a few other special provisions, including one requiring officers of seagoing vessels of more than 200 tons to be licensed and a fishing vessel of that tonnage would be subject to such requirement.

FISHING VESSEL SAFETY MEASURES IN OTHER COUNTRIES

I thought it would be of interest to refer briefly in this connection to the course of action other countries have taken in an effort to control accidents and losses on fishing vessels. On looking into the matter I find that many maritime nations, perhaps a majority, have in effect laws and regulations governing the construction, maintenance, and safety of operations of fishing vessels. I should like to sketch briefly the situation existing in this regard in Canada, Great Britain, the Netherlands, and Belgium.

In Canada a fishing vessel in excess of 15 tons gross tonnage is subject to inspection of the hull, machinery, and safety equipment in the manner set out in the Canada Shipping Act and Regulations thereunder. These regulations were prepared in consultation with the Canadian fishing industry. The enforcing Government Department is the Canadian Board of Steamship Inspection.

In Great Britain the laws pertaining to fishing vessels appear to take as their beginning point the background fact that Lloyd's inspects and classifies the larger fishing vessels, for the purpose of fixing rates, in accordance with type of hull structure, physical characteristics, etc. Unless a vessel is constructed in accordance with Lloyd's specifications for that particular class, insurance is unobtainable from a British insurer, or practically so, since the rates quoted without such classification become prohibitively high. With this situation in the background the Government does not, it appears, concern itself with fishing vessel classification or inspection certificates. The only laws and regulations applicable by their specific terms to fishing vessels pertain to fire-fighting and lifesaving equipment. These vessels are not subject to periodic inspection but are inspected at indefinite intervals to see to it that the fire-fighting and lifesaving equipment is as required. If on the occasion of the spot check of the fire-fighting and lifesaving equipment the vessel is noted by the inspector to be in unseaworthy condition, operation is prohibited until the deficiencies are corrected. Despite the absence of a legal require-

ment that these vessels have inspection certificates, the Ministry of Transport nevertheless has general authority to step in to prevent the unseaworthy fishing vessel from operating and generally does so by notifying British customs to withhold clearance.

In the Netherlands, all fishing vessels except undecked vessels fishing within sight of the coast are subject to inspection and require a seaworthy certificate issued by the Shipping Inspection Service of the Ministry of Traffic and Public Works. New construction must be approved. Classification Society Survey Certificates (of approved societies) are accepted in lieu of Government inspection. General examination of hull, machinery, launching gear, radio, outboard fittings, and sea valves is required annually. Manning requirements are specified for seagoing fishing vessels of over 50 tons, based on size and type of vessel and length of voyage. A minimum number of qualified men for watch on deck at sea is also specified.

In Belgium all seagoing fishing vessels are subject to inspection. Certificates are good for 1 year. If a vessel is classified by an approved classification society, its seaworthy certificate is recognized. If not so classified, the inspection service conducts the examination but permits the owner to select the rules of a recognized society which are then used to govern the inspection. In its operational details the scope of inspection and control exercised seems to be closely similar to the setup in the Netherlands. Manning scales are established. Documents are issued for skippers (three grades); qualified sailors, and deck apprentices; and for engineers, assistant engineers, engineer apprentices, and motor operators. Sometimes documents are issued to qualified deck personnel in small fishing vessels not required to have engineers.

CONCLUSION

In conclusion, one thing appears quite clear, and that is if ever laws extending inspection and safety requirements to fishing vessels should be adopted in this country, the system should be reasonable and have as its objective the retention of the bulk of equipment which the fishing industry now has while making it safer for the men. Corrective regulatory measures ought not to place an undue economic burden on the commercial fishing boat owner. Clearly, too, the details should be worked out in consultation with the fishing industry. Consultation with industry was the approach employed in developing the regulations applicable to the other commercial vessels in the American Merchant Marine.

The whole problem of technological change is one of the most disruptive factors to any occupational group. When the change is initiated from within the group, e.g., by suggestions from the industry, there is less chance of disruption. One of the bits of acquired wisdom in regard to introducing technical changes is to introduce them not whole hog, but to gage the rate and speed of change in such a way that the timing takes into account and allows for two types of adjustment: (1) economic adjustment, that is absorption of the cost of safety equipment, etc.; and (2) attitudinal adjustment, the effect on the habits and feelings of the people affected. Therefore, to introduce suddenly and completely a large number of safety regulations would seem undesirable.

SANTIAGO NEGOTIATIONS ON FISHERY CONSERVATION PROBLEMS AMONG CHILE, ECUADOR, PERU, AND THE UNITED STATES

BACKGROUND

Representatives of the United States met with representatives of Chile, Ecuador, and Peru at Santiago, Chile, from September 14 to October 5, 1955, to negotiate an agreement for the conservation of fishery resources of the eastern Pacific. While considerable progress was made in clarifying the views and interests of the parties to the negotiations, the delegations encountered basic problems which stood in the way of reaching agreement and led to the suspension of the negotiations in order that further consideration might be given to those problems in the respective governments.

Behind these negotiations lay a legal controversy between the United States and the Governments of Chile, Ecuador, and Peru with respect to the claims of the three South American countries to exclusive sovereignty over a so-called maritime zone extending not less than 200 miles off their coasts. Claims over such an area had been advanced by Chile and Peru individually in 1947. In August 1952 the Declaration of Santiago was signed by the three South American countries stating 200-mile claims in a joint manner and pledging themselves to collaborate for the protection of maritime resources in the area. Later they agreed not to enter into any international agreements affecting these claims without the concurrence of the other parties to the Declaration. It was because of this pledge that the United States, which first proposed such negotiations to the Government of Ecuador, agreed to negotiate simultaneously with all three South American Governments.

Despite United States protests against the claims of the three countries, which were directly in conflict with the well-established principle of the freedom of the seas, various actions by Ecuador and Peru sharpened the legal controversy. Fishing vessels of United States registry operating on the high seas off the coasts of Ecuador and Peru during 1954 and 1955 were seized and subjected to fines or taxes, or were otherwise molested. These incidents culminated in the seizure in March 1955 of two United States fishing vessels some 25 miles from the coast by an Ecuadoran patrol boat, in the process of which an American seaman was seriously wounded by gunfire.

Various high officials of the Governments of Chile, Ecuador, and Peru assured representatives of the United States that the sole purpose of the claims to sovereignty over the high seas set forth in the Santiago Declaration was to insure the conservation of the living resources of the sea which the three coastal countries considered essential to their economic development and their future welfare. The United States, in accordance with its well-established policy of promoting the conservation of fishery resources, therefore made a dual proposal to the three countries in a note handed to their Foreign Offices by the United States Embassies on May 13, 1955. In this note the United States proposed that the dispute over the claims by those countries to sovereignty and jurisdiction over the ocean to a distance of 200 miles from their shores be submitted to the International Court of Justice, and that negotiations be entered into between representatives of the three countries and the United States for the conclusion of an agreement for the conservation of fishery resources in which the four countries had a common concern. Such an agreement would not refer to the extent of territorial waters.

1/ Reprinted from The Department of State Bulletin, vol. XXXIII, no. 860 (December 19, 1955), pp. 1025-1039.
Note: Also see Commercial Fisheries Review, September 1955, pp. 1-13.

In their response to this note, the three South American countries on June 3, 1955, replied that they were not prepared to consider at the time whether or not the legal controversy should be submitted to the International Court of Justice (none of them having accepted the compulsory jurisdiction of the Court) but that they were prepared to initiate jointly the proposed negotiation of a conservation agreement.

U. S. AGREES TO NEGOTIATIONS

In a further note handed to the three Governments on July 9, 1955, the United States expressed regret at the unreadiness of the South American countries to submit the legal controversy to the International Court of Justice. The United States agreed nevertheless to open negotiations with the three countries for an agreement for the conservation of fishery resources of the eastern Pacific Ocean in general conformity with the conclusions on technical aspects of fishery conservation approved by the United Nations International Technical Conference on the Conservation of the Living Resources of the Sea (Rome, April 18-May 10, 1955). It was stated specifically that any such agreement would have to be drafted without reference to the claims of any of the four Governments with respect to territorial waters or other forms of special jurisdiction over the seas adjacent to their coasts.

After the formal opening of the negotiations on September 14, 1955, by His Excellency Rear Admiral Kare Olsen Nielsen, Foreign Minister of Chile, the question of how to proceed with the negotiations was discussed. The United States delegation proposed the following three points, to be discussed in the order indicated:

1. Consideration of the principal fishery conservation problems of the southeast Pacific of concern to the participating governments;

2. Examination of existing types of conservation measures and procedures that might be useful in solving these problems;

3. Type of agreement that would be required for satisfactory resolution of the conservation problems confronted, and provisions of such an agreement.

Two days later the delegations of Chile, Ecuador, and Peru, who acted in concert throughout the negotiations, replied that in their view the negotiations could be better facilitated by the immediate submittal by the United States of proposals for a conservation agreement. The delegations of these three Governments (which became known as the CEP delegations) also urged that in making any such proposals the United States take into account the desirability of preventing repetition of incidents such as those which had taken place involving United States fishermen during the past months.

U. S. PROPOSALS FOR CONSERVATION AGREEMENT

Accordingly, on September 20 the United States delegation presented to the other delegations a full statement of its understanding of the problems of fishery conservation in the southeastern Pacific, insofar as the United States had an interest therein and knowledge thereof, and submitted, on the basis of this understanding, its proposals for a conservation agreement.

In these documents the United States pointed out that its principal concern was with the stocks of yellowfin, skipjack, and big-eyed tuna and with small bait fish used in catching the tuna. The distribution of these stocks of tuna in the Pacific Ocean was described in relation to ocean current systems. Data concerning the condition of these stocks of tuna were referred to, emanating principally from the studies carried out by the Inter-American Tropical Tuna Commission.

The work of the Inter-American Tropical Tuna Commission was discussed, and the United States delegation pointed out that the convention which established that commission included, in its opinion, all or most of the provisions needed to handle the joint conservation problems of tuna and bait fish. However, since the CEP countries had not accepted an earlier invitation to join in this cooperative project for stocks of fish extending into the waters off their coasts, it appeared that they found the convention inadequate in one or more respects. The United States delegation stated that if they would explain these deficiencies, it would help in determining the type of agreement which would be satisfactory.

With reference to the drafting of a conservation agreement the United States delegation set forth its main ideas in document 7, and later in document 9. These documents outlined a conservation program involving the establishment of an international commission on which each participating state would be represented by a national section having one vote. The commission would carry out scientific research on stocks of fish of interest to two or more member states. In the discussion it was made clear that a state would be considered as having an interest in the conservation of a stock of fish either when it participated in the fishing of such stock or when such stock occurred in waters adjacent to its coast. The expenses of the commission with respect to any specific research program would be allocated to the member countries in relation to their share of the total catch of that stock of fish. The commission would be directed to determine, on the basis of scientific investigations, what, if any, conservation measures would be required to make possible the maximum sustainable productivity of a given stock of fish and to recommend the adoption of such measures to the Governments. Decisions of the commission were to be taken by agreement among all the national sections, but in the event of a failure to reach agreement, technical issues could be submitted to an arbitral procedure for a final settlement.

When the commission, either as a result of its own decision or of the arbitral findings, recommended conservation measures to the member states, these would go into effect automatically within a certain period of time unless a country objected. In the event of such objection, the United States proposals suggested the issue could again be submitted to an arbitral procedure for decision, and the award in this case would become binding upon all member states.

AVOIDING FURTHER INCIDENTS

The proposals incorporated in the documents referred to set forth the United States position. However, an additional oral statement at the meeting of September 20 was made in reply to the CEP request that consideration be given to means of avoiding further incidents. The United States delegation suggested that the conclusion of a conservation agreement along the lines proposed would greatly help avoid further incidents by providing for international regulation of vessels of the parties fishing in the waters off the coasts of the CEP countries. Rules would be established by agreement among the countries on the proposed international commission and, in the view of the United States, should be enforced by each Government against its own vessels. The United States delegation observed that it had noted with interest the statements of officials of the CEP Governments that the consideration which should govern activities of foreign fishermen in the waters off their coasts should be that they conform to rules for the conservation of the species, and suggest that so long as the commission established such regulations by agreement of all member states, no further difficulties regarding their adoption and validity should be encountered.

The United States proposals did not, however, prove acceptable to the CEP countries. On September 23 they stated their disagreement therewith and proposed certain alternative ideas differing in various respects from those advanced by the

United States. A major difference in the proposals put forth by the CEP countries had to do with the role assigned to the coastal state in enforcing any conservation measures which the international commission might propose, or which the coastal state itself might wish to put into effect. The CEP countries wished to have the agreement recognize the right of the coastal state to exclusive control of fisheries out to 12 miles from its shores and also in areas which each coastal state would unilaterally designate as constituting "areas traditionally exploited" by it. These areas would, judging from illustrative material presented during the negotiations, extend 50 to 60 miles beyond a 12-mile zone and cover most of the desirable fishing grounds off the coasts of the three South American countries. Fishing within these two classes of areas was to be controlled by licenses issued by the coastal state. In the remainder of the area covered by the proposed agreement, fishing for tuna and bait fish would be permitted subject to existing conservation regulations which would presumably include not only those established by the new commission but also apparently regulations promulgated by the three South American States either individually or jointly. Moreover, Chile, Ecuador, and Peru wished in essence to have exclusive jurisdiction to enforce the regulations within a 200-mile zone and, further, to occupy a preferential position with respect to any quotas governing the quantity, kind, etc., of fish taken which might be established pursuant to the conservation program.

The negotiations at this point began to focus upon what proved to be an insuperable obstacle, namely, the insistence of the CEP countries on inserting in any agreement provisions which would in effect recognize their claims to exclusive jurisdiction over large areas of the high seas off their coasts. The U. S. delegation pointed out that the authority to license fishing operations would involve the authority not only to determine the fees and other conditions of the licenses but also the authority to withhold them completely.

Moreover, the U. S. delegation pointed out that these provisions were in no sense required for the effective execution of a conservation program. In support of this point the United States amplified and clarified its proposals regarding the controversial issues. It stressed that effective enforcement could be achieved by agreement on the provisions which would accord to the properly constituted authorities of any contracting party the right to board any fishing vessel flying the flag of a contracting party within the convention area if there were reason to believe that a conservation regulation was being violated, and, if supporting evidence was found, to take the vessel into the port and prefer charges against it. It urged that at this point the vessel should be promptly turned over to officials of the country of registry for trial and, if guilty, for punishment of the offense. It was pointed out that this system had been incorporated satisfactorily in several other international fishery conservation agreements.

Furthermore, in order to avoid damaging the juridicial position of either side, the United States delegation proposed that an article be adopted in the convention clearly stating that it was being entered into "without affecting the position of any contracting state in regard to territorial waters."

Finally, the United States, while unable to accept the idea of exclusive jurisdiction by the coastal state over the "traditional" fishing areas which it might unilaterally declare, made a substitute proposal. It agreed to consider any proposals which the CEP countries might wish to advance to take care of special problems or situations involving small coastal fishing villages in the CEP countries which were dependent directly upon the sea for their sustenance. This proposal was justified on humanitarian grounds. The United States delegation insisted, however, that any cases falling under this general proposal would have to be supported by a factual showing of the dependence of the community upon the sea for its sustenance. This proposal did not prove to be of interest to the CEP states.

CEP DRAFT CONVENTION

At the same meeting at which the United States submitted its document 9, the CEP countries presented a complete draft convention, modifying in some respects their early proposals. However, the same fundamental obstacles to agreement remained, namely the desire of the CEP states to assert exclusive jurisdiction over large areas of the high seas off their coasts. A new thought was introduced in regard to the trial of alleged violations. The CEP draft suggested the setting up of a special jurisdiction under which the national section of the state making the arrest would try the vessel charged with an offense by means of administrative procedure and would impose penalties. It was further suggested that should the alleged offender wish to appeal he could do so to a special tribunal made up of the two national sections of the commission other than those representing the country of the alleged offender and the country of the arresting officer. In view of the bilateral character of the agreement proposed by the CEP countries, with Chile, Ecuador, and Peru identified as one party, and the United States identified as the other party, this procedure would, in most cases, result in two members of the same party hearing appeals from decisions in which the other member of that party was involved.

NEGOTIATIONS SUSPENDED

At this stage it became clear that the negotiations had proceeded to a point which exhausted the capacity of the delegations to reach agreement within their instructions. The issue posed by the insistence of the CEP countries on exclusive jurisdiction over areas which the United States considered to be high seas in accordance with existing international law was apparently insuperable. The proposal for special tribunals to try offenders posed problems which would at the very least require careful and extended consideration, certainly within the United States Government. The proposals of the United States with respect to policing and enforcing the area likewise proved to be beyond the authority of the CEP delegations to accept. Accordingly, a decision was made to suspend the negotiations and a communique was issued announcing this decision.

Differences in the interpretation of scientific information were also brought out in the course of the negotiations. The CEP countries in their document of September 23, advanced a theory of "eco-systems" and "biomas" according to which the interdependence of life on the coastal land with the living communities of the sea, plus the geographic, hydrographic, climatic, and other environmental factors influencing both, were said to create a relationship of such unity as to serve as a scientific basis for the legal claim of coastal states to preferential rights over adjacent waters. The United States delegation challenged this concept, pointing out that the idea of the existence of a perfect unity and interdependence between the communities that live in the sea and the coastal populations could have at most limited, if any, validity, such as for example in the well-known case of the guano bird populations of Peru. It stated that, on the contrary, conditions responsible for the existence of rich marine life in the area off the west coast of South America were the result of meteorological and oceanographical factors originating far from those areas--factors such as major wind systems of the Pacific and the interplay of its great oceanic currents. It also pointed out that many stocks of fish of greatest importance, such as tuna, moved widely over a broad area through and beyond the "biomas" of the area in question and that the interrelated communities of living organisms of the ocean, moreover, certainly bore no relationship to national boundaries as established by man on the land.

Such differences were in part responsible for a substantial variance of opinion regarding the area to be covered by the proposed conservation agreement. The United States urged that, since some of the most important stocks of fish to be conserved (yellowfin and skipjack tunas) ranged all the way from the waters off Chile

north to California, the convention should cover this entire area and be open to adherence of other American coastal states contiguous to these waters. Otherwise, only divided and therefore less effective attention could be given to those important stocks of fish. The CEP countries made it clear, however, that their interest was confined to waters off their coasts and that they were not prepared to enter into a broader agreement. The United States finally stated that, if the CEP states found it impossible to participate in a broader arrangement, it would, should other outstanding differences be resolved, agree to work out with them a convention limited to the four negotiating states. However, in that case the United States would suggest certain changes in the functions to be assigned to the proposed commission to avoid conflict or duplication with the research activities of other organizations.

PURPORT OF 1945 PROCLAMATION

The United States delegation was interested to note during the course of the negotiations that official or public opinion in the CEP countries labored under considerable misunderstanding in respect to facts relating to United States policy regarding fishery conservation. For example, the purport and effect of the proclamation issued by the President of the United States in 1945 concerning fishery conservation was widely misinterpreted as constituting a precedent for unilateral claims to large offshore areas of high seas for conservation purposes. The United States delegation repeatedly made clear that the United States through the Truman proclamation did not claim exclusive jurisdiction over the high seas off its coasts but on the contrary recognized that when foreign fishermen participated in fisheries off the coast of the United States beyond the 3-mile limit, conservation regulations would be worked out with the agreement of the governments concerned. It explained that only when United States nationals alone were involved would the United States establish the conservation regulations unilaterally in the exercise of the right of any government to regulate its own nationals on the high seas.

Another misconception of United States policy at times reflected in statements appearing in the local press during the course of the negotiations was that the United States represented those countries which wished to be free to fish without restraint anywhere in the world, as opposed to the CEP countries, which represented the desire of other states to protect and conserve fishery resources. The United States delegation took such opportunities as it could to reiterate the firmly established policy of the United States to promote the conservation of fishery resources in which it had an interest in any area of the world. It was pointed out that the United States had in fact entered into more international agreements for the conservation of fishery resources than any other country. The regulations under these conservation agreements have proved highly beneficial to the fisheries concerned and thereby demonstrate to interested people in the United States, especially its fishermen, the positive value of effective conservation programs. The initiative taken by the United States in establishing with the Governments of Costa Rica and Panama the Inter-American Tropical Tuna Convention (which is open to adherence by other interested states) has produced the most extensive and useful series of conservation studies that have been developed for any stocks of fish in the southeast Pacific. The work of the Inter-American Tropical Tuna Commission has already established a firm basis of knowledge concerning the condition of these stocks of fish and has placed the commission in a position to devise and recommend conservation regulations at any time, should the condition of these tuna stocks indicate such measures to be necessary.

In the course of the Santiago negotiations the United States made every effort to include in its proposals for a conservation agreement measures and procedures adequate for the cooperative activities necessary to assure the continued productivity of the stocks of fish in the eastern Pacific Ocean of interest to the four countries. Such an agreement would make the participating countries full partners in a conservation program involving effective research, recommendations for conservation

based on scientific data, and enforcement of necessary measures. However, it was not possible to conclude such an agreement owing to the inability of the delegations of Chile, Ecuador, and Peru, without further consultation with their respective Governments, to negotiate an agreement which did not include provisions in effect giving recognition to their claims to exclusive jurisdiction over large areas of the high seas off their coasts.

HANDLING BAIT SHRIMP

To handle bait shrimp properly the shrimp must be in good condition when transferred to the holding tanks or pens. They must not be handled any more than necessary, and the water should be clean and uncontaminated. It is best to pump water directly from the ocean through the shrimp tank. If this is not possible, then the water should be changed as frequently as is convenient and should be aerated to keep it well supplied with oxygen.

Strict care should be taken to see that there is no copper or brass anywhere in the tanks or the pipes supplying the salt water to them. This is important since small quantities of copper going into solution with the sea water are sufficient to kill the shrimp. The tanks should be made of some material that will not contaminate the water--wooden or glass tanks are best. Concrete tanks should be coated with asphaltum paint to waterproof them. Such tanks should be thoroughly soaked and flushed to make sure that any soluble material in the paint or tank that will contaminate the water is removed. Floating boxes in water where there is a moderate flow are the best.

The temperature is an important factor. In the northern part of Florida where the white shrimp are caught it is best not to allow the temperature to exceed 60° F. The optimum temperature is between 50° and 60° F. Elsewhere where the pinks are caught, particularly in southern Florida, the temperature may be allowed to go as high as 80° F.

Since uneaten food fouls the water, it is advisable not to feed bait shrimp. Some dealers do feed their shrimp, however, using chopped up barnacles, fish, shrimp, and similar foods.

If no water circulation is used in the tanks, three shrimp per cubic foot may be held for a considerable time. With circulation this figure can be increased to ten shrimp. For short holding periods the number-per-cubic-foot can be increased considerably.

--The Live Bait Shrimp Fishery of the Northeast Coast of Florida,
The Marine Laboratory, University of Miami,
Coral Gables 34, Fla.

RESEARCH
IN SERVICE LABORATORIES

JACKETED-PRINCIPLE COLD-STORAGE ROOM

The keeping qualities of stored frozen fishery products are dependent to a large degree on the atmospheric conditions within the refrigerated storage room. Fluctuating temperatures and low relative humidities in the refrigerated storage room tend to cause excessive dehydration of the products during storage. As a result the the fish not only lose weight, but also the quality depreciates due to loss of flavor, development of off-odors, and poor appearance. Such loss in weight and quality can "spell the difference between profit and loss" in any marketing transaction.

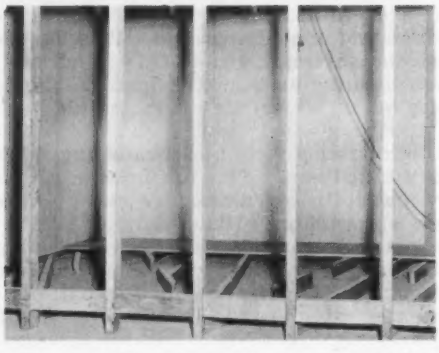


Fig. 1 - Arrangement of air ducts in the floor of the jacketed cold-storage room.

A refrigerated room designed in a manner so as to maintain ideal product environment offers tremendous possibilities in reducing the product losses which occur as a result of present cold-storage conditions. The jacketed cold-storage room (its use advocated in 1927 by Dr. Huntsman while Director of the Atlantic Fisheries Experimental Station at Halifax, Canada) seems to offer a combination of ideal product environment and practical engineering design. Some cold storage rooms employing the jacketed principle have been built in Canada; however, the lack of important data on preservation of product quality and cost of operation has made industry somewhat reluctant to accept this design. In order to furnish data on such a method of storage, a cold-storage room employing the jacketed principle was constructed at the U. S. Fish and Wildlife Service laboratory in East Boston, Mass.

In this freezer, cold air circulates through an enclosed space or jacket which completely surrounds the room. The outside surface of the jacket is lined with suitable insulation 10 inches thick. The inside surface of the jacket consists of the materials which comprise the walls, floor, and ceiling of the storage room. Vertical and longitudinal wooden members in the jacket are arranged so as to provide ducts which distribute cold air in the proper amounts through various parts of the jacket. The jacket is a closed-duct system containing a set of finned-pipe cooling coils to maintain the air at the proper temperature and two squirrel-cage fans to provide the necessary air circulation. The cold air circulating through the jacket maintains the inner room at predetermined temperatures of 0° to -25° F.

Some other features of this new cold-storage room are a two-stage Freon 22 refrigeration system, doors in the inner walls of the room which may be opened to enable forced air circulation directly into the room for rapid cooling when initially cooling the room, and dampers to control the air flow in the individual ducts.

Proper air circulation throughout the jacket results in temperature differences as small as 2° F. between the temperature of the jacket walls and the inside room temperature. Owing to this small temperature difference, it is possible to maintain a very high relative humidity within the storage area. Also, the air in the jacket does not enter the refrigerated room; therefore, it cannot draw moisture away from the product. During operation, the moisture contained in the air within the jacket is withdrawn by artificial defrosting. Consequently, the air in the jacket becomes very dry resulting in very little frost accumulation on the cooling coils.

During preliminary tests a room temperature of -23° F. with a maximum variation of only 0.5° F. was obtained by cycling the compressor off a thermostat located in the jacket. Several samples of exposed fish blocks were placed in a conventional-type still-air room at -5° F. and in the jacketed room. Six weeks later the samples stored in the still-air room showed a weight loss of approximately 6 percent, while no appreciable loss in weight occurred in the samples stored in the jacketed room.

More extensive tests will be conducted to determine the effect of storage in this type of room on the storage life of fishery products. Engineering data also will be obtained in regard to the operation of this equipment.

USE OF FISH OILS FOR ORE FLOTATION

During the early 1920's, fish oil was, among other oils, used as a collector in ore flotation. In this process a separation is effected by concentrating low-grade ores with the use of a collector to form a foam which floats the lighter particles such as siliceous material to the top and allows the heavier ore particles to sink to the bottom. Subsequent research by producers of oils of animal or vegetable origin resulted in findings that separated fatty acids or derivatives of fatty acids were more efficient collectors than the oils themselves. With such research lacking for fish oils, such oils dropped out as a source of material for this usage. The quantity of oil derivatives used for this purpose is not large with respect to the weight of the ore, amounting to only about half a pound per ton. In the past, when ore flotation has been used largely as a means of concentration of certain sulfide ores, the potential market of oils for ore flotation has not been very great. Iron ore represents by far the largest tonnage of all ores produced. With the depletion of high-grade iron ores in the United States and the possibility of ore flotation becoming a major method of concentrating low-grade ores, the potential requirement of oil derivatives for this purpose is now far greater than in the past.

Research under the Saltonstall-Kennedy Act has been undertaken at the School of Mines and Metallurgy, University of Minnesota, to investigate the properties of fish-oil derivatives as ore collectors for concentrating low-grade iron ores, sulfide ores, and other ores. Initial work is being concentrated on use for iron-ore flotation.

Preliminary work has developed a procedure for comparing the efficiency of fish oil-derivative collectors with oleic acid as a standard using laboratory and pilot plant-scale techniques. On a theoretical basis, fish oils with longer chain fatty acids combined with a high degree of unsaturation should offer certain advantages over material now used. In initial tests fish-oil fatty acids have been used successfully in experimental tests and have been found to form a foam which is tougher and more tenacious than that produced with oleic acid.

Arrangements have been completed recently for Hormel Institute to assist in this program by preparing certain fractionated fish-oil fatty acids for future testing.

Certain chemically-altered derivatives are also being prepared for use in the program by the U. S. Fish and Wildlife Service's Seattle Fishery Technological Laboratory.

FROZEN BREADED SHRIMP FEDERAL SPECIFICATION

Current Armed Forces and Federal Agencies requirements for frozen breaded shrimp indicated the need for a Federal Specification to facilitate government purchases of the product. Accordingly, a Proposed Federal Specification, PP-S-315 (Shrimp, Breaded, Raw; Frozen), dated February 23, 1956, was prepared by the Quartermaster Corps Food and Container Institute for the Armed Forces and the U. S. Fish and Wildlife Service. This draft has been submitted to the various Federal agencies and to industry for review and comment. It has not yet been approved and is subject to modification pending coordination.

COD-LIVER OIL CONCENTRATE HAS UNIQUE USE

Cod-liver oil concentrate (which is high in natural vitamin A) is superior to synthetic vitamin A in the diet of tuberculous patients, according to a paper ("A Physiologic and Clinical Study of Failures in Vitamin A Metabolism in Tuberculous Patients") by Horace R. Getz which appeared in the American Review of Tuberculosis and Pulmonary Diseases, vol. 72, no. 2.

A summary of the paper indicates that:

"A study was organized to determine if nutritional deficiencies in tuberculous patients could be abolished, and if their removal would lead to improvement in clinical progress.

"Seventy-eight patients with moderately advanced tuberculosis, all of them showing nutritional deficiencies, were placed on bed rest, with a good hospital diet, and subjected to nutritional study and treatment. . . .

"At the start of the investigation, most of the 78 patients were found to have abnormally low blood concentrations of vitamin A and vitamin C. Signs and symptoms of vitamin A deficiency were discovered in patients with normal carotene and vitamin A ester concentrations. This suggested failure of the tissue of these patients to convert carotene to vitamin A and to release vitamin A from vitamin A ester.

"For purposes of the investigation, the 78 patients were divided into three groups: Group I, with no vitamin supplementation of the hospital diet; Group II, which received the same basic diet as group I, plus supplementation with vitamin A in the form of the synthetic substance; and Group III, similar to Group II, which received vitamin A in the form of crude cod-liver oil concentrate instead of synthetic vitamin A.

"The basic hospital diet, more than sufficient for caloric and protein requirements, with more than average amounts of vitamins A and C, did not raise the original low plasma concentrations of tuberculous patients in these two vitamins significantly.

"Therapy with vitamin A produced slow and irregular responses in vitamin A blood concentrations. The response was much better with the cod-liver oil concentrate than with synthetic vitamin A.

"All patients in the group which received the cod-liver oil concentrate (Group III) had a good clinical course and were discharged as inactive cases of pulmonary tuberculosis. There were no clinical failures. In contrast, clinical failures occurred in both the control group and the group which received synthetic vitamin A."

EXPANDING SCHOOL-LUNCH PROGRAM INCREASES POTENTIAL MARKETS FOR FISH

Over 10 million school children eat in school lunchrooms. Eating habits of children throughout the country will be largely influenced by the meals they receive daily in the nationwide school-lunch program. This affords an excellent opportunity for the fishing industry to benefit from this large potential market.

In 12 years, the number of children participating in the national school-lunch program has almost tripled and is increasing at the rate of 8 to 10 percent each year. In 1944, the first year that

A U. S. Fish and Wildlife Service home economist conducting a fish-cookery demonstration at Paris, Ill.

Federal assistance was provided, the program reached about 3½ million children. Since that time, the program has increased year by year to the present total of slightly more than 10 million children. This represents one of the most rapid growing volume markets in the country.

More children will be attending school, more schools will be equipped with lunchroom facilities, and more communities are planning lunch programs as an essential auxiliary food service.

Another measure of program growth is the improved quality of the meals. In 1944 less than one-half of the meals served were Type-A lunches which require milk, 2 ounces of protein, fruit or vegetable, and bread and butter. In 1952, more than two-thirds of the meals served met the Type-A requirement.

As more and better meals are served under the program, schools have purchased correspondingly larger quantities of food from local wholesalers, retailers, and producers. Value of foods purchased locally by schools increased from $129 million in 1947 to $250 million in 1952. These local purchases represent over 80 percent of the value of all foods used by the schools.

The United States Fish and Wildlife Service's program of fish-cookery demonstrations reaches over one million of these school children. An extensive program of fish-cookery demonstrations in cooperation with state school-lunch programs has been in progress for several years. School-lunch managers and cooks attend these demonstrations and learn new and easy methods of preparing fish in the school lunchrooms. Children should be served fish more often as a result of the increased knowledge of the school-lunch cooks, and therefore acquire an appetite for fish dishes, thus increasing the use of fish both at school and in the home.

Additions to U. S. Fleet of Fishing Vessels

FEBRUARY 1956: A total of 26 vessels of 5 net tons and over were issued first documents as fishing craft during February 1956, according to the Bureau of Customs. This was 2 vessels more than the number reported for the corresponding month of 1955.

U. S. Vessels Issued First Documents as Fishing Craft, February 1956 and Comparisons

Section	February		Jan.-Feb.		Total
	1956	1955	1956	1955	1955
	(Number)				
New England	3	5	4	5	18
Middle Atlantic	3	-	5	1	13
Chesapeake	3	5	8	9	54
South Atlantic	6	2	10	6	65
Gulf	7	5	10	8	103
Pacific	2	4	3	6	117
Great Lakes	-	-	-	-	9
Alaska	1	3	2	7	35
Hawaii	1	-	1	-	3
Virgin Islands	-	-	-	-	1
Total	26	24	43	42	418

Note: Vessels have been assigned to the various sections on the basis of registered home ports.

The Gulf area led all others during February 1956 with 7 newly-documented craft followed by the South Atlantic area with 6; the New England, Middle Atlantic, and Chesapeake areas with 3 each; and the Pacific area with 2. The Alaskan and Hawaiian areas reported 1 each.

Compared with the same month of last year, the New England, Chesapeake, Pacific, and Alaskan areas each had 2 less newly-documented craft added to their respective fishing fleets during February 1956. The Middle Atlantic and Gulf areas had a greater number of fishing vessels documented for the first time during February 1956 than during the corresponding month of 1955.

During the two-month period ending with February 1956, a total of 43 fishing vessels was documented for the first time as compared with 42 for the corresponding period of last year.

Cans--Shipments for Fishery Products, January 1956

Total shipments of metal cans for fish and sea food during January 1956 amounted to 4,402 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 4,743 short tons in January 1955. Fish canning in January 1956 was confined largely to tuna.

Note: Statistics cover all commercial and captive plants known to be producing a metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Federal Purchases of Fishery Products

CANNED FISHERY PRODUCTS PURCHASED THROUGH MARKET CENTERS, 1953-55: Canned tuna, salmon, and some sardines were the principal canned fishery products purchased for the use of the U. S. Army, Navy, Marine Corps, and Air Force by the Army Quartermaster Corps through its Market Centers. In 1954 canned tuna purchases totaled 3.8 million pounds, but in 1955 they dropped to 2.9

million pounds. Canned salmon purchases climbed from 471,000 pounds in 1954 to 2.8 million pounds in 1955.

Practically all of the canned tuna and salmon purchased by the Defense Department is procured through its Quartermaster Market Centers, but it is believed that only a portion of the requirements for canned sardines are represented in the table since some canned sardines and all other canned fishery products are procured locally and no information is available on these local purchases. Therefore, actual purchases of canned fishery products are higher than indicated in the table.

Purchases of Canned Fishery Products by the Department of Defense Through Its Quartermaster Market Centers, 1953-55

Canned Product	1955	1954	1953
	(1,000 Pounds)		
Tuna	2,906	3,779	1,298
Salmon	2,785	471	766
Sardines	143	450	1,899

* * * * *

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY THE DEPARTMENT OF DEFENSE, FEBRUARY 1956: The Army Quartermaster Corps during February 1956 purchased for the use of the Army, Navy, Marine Corps, and Air Force a total of 1.7 million pounds (value $0.8 million) of fresh and frozen fishery products. This was an increase of 53 percent in quantity and about 14 percent in value as compared with January 1956 purchases. Compared with February 1955, the purchases this February declined about 5 percent in quantity, but the value was up about 13 percent.

Purchases of Fresh and Frozen Fishery Products by Department of Defense (February and the First Two Months-1955 and 1956

QUANTITY				VALUE			
February		Jan.-Feb.		February		Jan.-Feb.	
1956	1955	1956	1955	1956	1955	1956	1955
(Millions of Pounds)				(Millions of Dollars)			
1.7	1.8	2.8	3.8	0.8	0.8	1.5	1.6

Prices paid for these products by the Department of Defense in February averaged about 51 cents a pound as compared with 68.7 cents in January 1956 and 43 cents a pound in February 1955.

Purchases during the first of two months of 1956 totaled 2.7 million pounds (value $1.6 million)--lower by 28.5 percent in quantity and 1.1 percent in value as compared with the first two months of 1955.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures.

Great Lakes Fishery Investigations

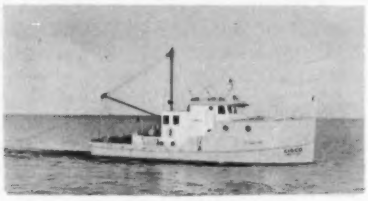
RESEARCH VESSEL "CISCO" OPERATIONS IN 1955: The research vessel Cisco in 1955 completed the hydrographic and fishery study of Lake Michigan started in May 1954. The first two cruises of 1955 in January and March were in the vicinity of Grand Haven and completed operations in the southern half of the lake. The subsequent cruises (III-XI, May-November) covered the northern half of the lake.

A primary objective of the Cisco operation was to study the chubs (Leucichthys sp.) of Lake Michigan, the only commercially important fish remaining in the deeper portion of the lake since the sea lamprey destroyed the lake trout. Data for comparing the present chub population with that of the early 1930's was available from records of the research vessel Fulmar which worked Lake Michigan in 1930-32. Gill nets ($2\frac{3}{8}$-, $2\frac{1}{2}$-, $2\frac{5}{8}$-, $2\frac{3}{4}$-, and 3-inch stretched measure) made to the same specifications as those used by the Fulmar were fished intensively during Cruise V (July 1955) in the area between Charlevoix and Manistique at depths and stations fished intensively during the same month in 1932. In Cruise VI (August) these nets were fished between Ludington and Manitowoc at depths and stations most heavily fished by the Fulmar in 1930-31.

Preliminary comparisons of the chubs taken in experimental Fulmar-type nets show that the total number of fish is about the same now as it was in the early 1930's. The average length of chubs taken in experimental gangs is about 1½ inches shorter now than in the 1930's. In terms of chubs suitable for commercial use, less than 25 percent of the fish in present catches were over 10 inches long whereas in the 1930's over 60 percent were over 10 inches long.

Increased pressures exerted by the commercial fishery and the sea lamprey are believed to have reduced the average size of the chubs. The commercial catch has increased tenfold from 1940 to 1953. Since small chubs are of little or no market value, the fishermen fish selectively for larger chubs. Sea lampreys, still abundant in Lake Michigan, have only chubs to feed on in their preferred deep-water habitat. They also select the larger chubs. This selectivity has caused the two largest species (Leucichthys nigripinnis and L. johannae) to become extremely scarce.

The smallest chub (L. hoyi), commonly known as the bloater, is avoided by the fishermen and sea lampreys alike because of its size. It was preyed upon to a large extent by the lake trout now absent from the lake. Consequently, the bloater is three times as abundant now as it was in the early 1930's. Other species (L. alpenae, L. zenithicus, L. reighardi, L. kiyi, L. nigripinnis, and L. johannae) which were less subject to predation by the lake trout are now used more heavily by the commercial fishery and sea lamprey. They have decreased to about one-third of their former abundance.



Cisco, research vessel of the Service's Great Lakes Fisheries Investigation.

The total weight of chubs taken in Fulmar-type nets was 20 percent less in 1954-55 than in 1930-32. Although these nets did not sample the smallest fish, which may be more abundant now than before, it appears that the lake may be supporting fewer pounds of chubs now than it did in the 1930's. Chubs of the same length weigh more now than they did in the 1930's, which indicates that presently there is probably more food available per pound of fish.

Materials were also collected for a complete study of the distribution and biology of the present chub populations and to establish a base abundance index that can be used for future reference. Experimental gangs of nylon gill nets with mesh sizes ranging from 2 to 4 inches were set at depths between 25 and 135 fathoms at representative locations in northern Lake Michigan. Otter-trawling collected chubs both on the bottom and at middepths. Vertical distribution of chubs was determined by sitting 1- and 2-inch mesh gill nets obliquely from the surface to the bottom. This life history material will be used to evaluate further changes in the chub population that have resulted from the sea lamprey's upset of the biologic community and the increased selective commercial fishing effort for chubs.

Although the collection of chubs was the primary objective of most fishing operations, much information was obtained on other species in the lake. Many records were made of the occurrence of the alewife (Pomolobus pseudo-harengus), a new species just establishing itself in Lake Michigan. Yellow perch (Perca flavescens) were taken in abundance from shallow areas and provided an abundance of material for biological studies.

Young fish in the larval and fry stages collected in plankton nets will provide valuable information on the early life stages of chubs and other species.

A sensitive recording fathometer operated continuously while the Cisco was on the lake. Characteristics of bathypelagic records on the fathometer were studied intensively and explored with special trawling and plankton sampling to identify the midwater sound scatterers. Special observations were made of the fathometer responses for different types of bottom formations characteristic of the Great Lakes, and for the presence of fish on and above the bottom.

Hydrographic transects were made across the lake between Ludington and Manitowoc, Frankfort and Sturgeon Bay, Charlevoix and Manistique, and Manistique and Frankfort. Surface water temperature was recorded by a thermograph all of the time the boat was on the lake. On all transects, a bathythermograph cast was made at 5-mile intervals. On the first three transects surface water samples were collected and 20 drift bottles (10 weighted with sand and 10 with metal drags suspended from them) were released at the time of each bathythermograph cast. Also, on the first three transects one station was occupied near each shore and one near the center of the lake where water samples and reversing thermometer temperatures were taken from the surface to the bottom, and a plankton tow was made at 5 meters below the surface. At various times during the year, plankton tows and hydrographic observations were made off Frankfort at various depths over continuous periods ranging from daylight into darkness.

Temperature data is now undergoing careful analysis to determine the general thermal characteristics of the lake and some of the water movements that are reflected in the thermal structure. In general, there is a well-defined thermocline in Lake Michigan from late May until mid-December. Although the depth and thickness of the thermocline can vary greatly at different locations at any one time, its mean depth increases from spring until fall and its thickness tends to reach a minimum during the warmest months. The thermocline is disrupted occasionally by local upwellings, the extent and duration of which depend on the intensity and persistence of conditions (generally winds) that caused them. The thermal structure of Lake Michigan is not as regular as that commonly found in inland lakes. Thermal irregularities are due mainly to water movements that are organized primarily in relation to climatic forces and to the con-

figuration of the basin. Although the lake basin is large compared with most fresh-water lakes, its confinement and irregular configuration seem to minimize the effects of the geophysical forces that are so active in regulating water movements in the ocean.

Nearly 60 percent of the 4,000 drift bottles released during the year had been returned by the end of the year. One objective of the study was to learn which of two methods was best for weighting the bottles. One series of bottles was weighted with sand so that about ½ inch of the bottle was exposed above the water. Another series was weighted similarly with a metal drag attached to the bottle with a wire. Initial observations showed that the bottles weighted with sand washed up on the beach more quickly than those with drags after reaching shore but that their movements were influenced more by the wind because the drags gave added resistance to wind-induced movements.

Reply cards enclosed in the drift bottles asked the finder if a drag was attached to the bottle when it was found. In the first releases, over 50 percent of the bottles had lost their drags before they were found and remarks of the finders indicated that the drags were lost because the wire was broken at the neck of the bottle.

Loss of drags was greatly reduced by introducing a brass ring in the connection at the neck of the bottle to allow the bottle to move freely without bending the wire. The resistance of bottles with drags to being washed up on the beach was eliminated by shortening the wire between the drag and the bottle from 3 feet to 1 foot. With the short wire both drag and bottle are in the surf when the bottle reaches shore and are washed onto the beach simultaneously. Comparisons between movements of bottles in the lake and observations of dye patches released at 1 and 3 feet below the surface showed that the movement of the bottles would not be changed by the shallower drag attachment.

The bottle with drag suspended by a one-foot wire having a flexible brass ring attachment at the neck of the bottle has been adopted as the most suitable drift element for water movement studies of the Great Lakes. It has no disadvantages over the bottles weighted with sand and has the advantage of being less influenced by direct action of the wind.

Analysis of water collected in 1955 is incomplete but continues to show that the water of Lake Michigan is relatively uniform throughout but has a somewhat greater concentration of chemical constituents near shore.

Special attention has been given to a study of the life history, distribution, and movements of Mysis relicta and Pontoporiea hoyi, two of the more important fish-food organisms in Lake Michigan. Mysis was successfully established in a laboratory culture and a study of its life cycle is being continued.

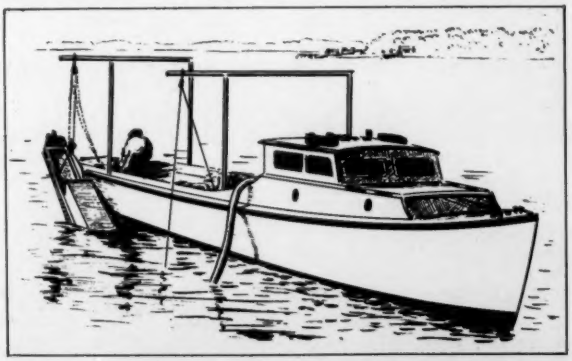
Analysis of zooplankton collected at various depths during daylight and dark is being made to show the distribution of various plankters and what diurnal movements, if any, occur. Extensive collections of bottom organisms have been made but are not yet undergoing analysis.

--Stanford H. Smith,
Fishery Research Biologist,
Great Lakes Fishery Investigations,
Ann Arbor, Mich.

Maryland

NEW CLAM RESEARCH VESSEL OUTFITTED: A hydraulic clam research vessel, the John A. Ryder was recently acquired by Maryland, according to the February 1956 Maryland Tidewater News of the Maryland Department of Research and Education.

The vessel is fully equipped for experimental dredging of soft-shell clams. With a length of 42 feet over-all and a registered tonnage of 8, the boat has dredging equipment, and a motor-driven centrifugal pump of six-inch intake supplies hydraulic power. Living quarters for two are provided in the trunk cabin. Adequate stowage is available for diving gear, photoelectric instruments, and other equipment used in the clam research program.



Hydraulic clam research vessel John A. Ryder.

Noteworthy is the fact that the John A. Ryder and the entire complement of dredging and research equipment has been purchased from the Clam Fund, which was earmarked by the 1955 Maryland Legislature for the purpose of clam research, and supported solely through a bushel tax on Maryland's production of soft-shell clams. The boat has been named for a pioneer shellfish biologist who, during the period 1881-1885, made what are believed to be the first published observations on the biology of the soft-shell clam in the Chesapeake area.

Note: Also Commercial Fisheries Review, March 1956, p. 19.

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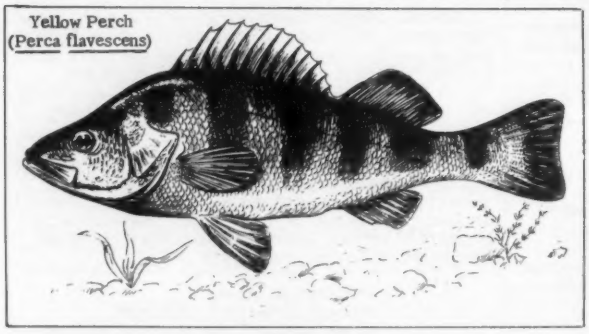
YELLOW PERCH SPAWNING SURVEY: A survey of spawning areas of yellow perch are being carried out this spring by Maryland's Chesapeake Biological Laboratory as part of a study of the life history of this species in Tidewater Maryland.

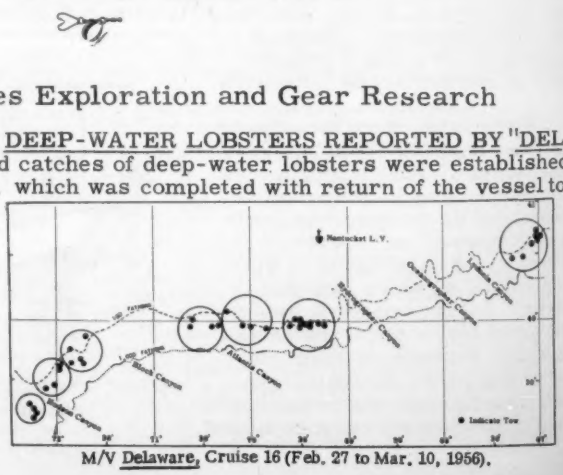
Since the exploration by one or two biologists of the many miles of tributary streams would be a monumental task, Maryland Tidewater Fisheries officers, Game and Inland Fish wardens, and the general public are all being asked to cooperate by reporting any evidence of yellow perch spawning in their areas. During late February and early March yellow perch move into upstream areas and spawn over a two- to three-week period. The eggs are extruded in long amber strings which catch on brush and other underwater obstructions. These egg strings may be up to several feet in length and take the form of a hollow tube 2 to 4 inches in diameter with the walls pleated like accordion bellows. These eggs will hatch in approximately three weeks depending on water temperatures.


Yellow Perch
(Perca flavescens)

Readers who observe these eggs should send a post card to the Maryland Tidewater News, giving: (1) the date and (2) the exact locations where yellow perch eggs were observed. Information supplied by the public will be followed up by a field biologist, the February 1956 issue of that publication points out.

North Atlantic Fisheries Exploration and Gear Research

NEW RECORD CATCHES OF DEEP-WATER LOBSTERS REPORTED BY "DELAWARE" (Cruise 16): New record catches of deep-water lobsters were established during Cruise 16 of the Delaware, which was completed with return of the vessel to East Boston on March 9, 1956. On three consecutive tows, numbers 36, 37, and 38, a total of 3,290 pounds of deep-water lobsters was landed. The new individual tow record is number 38, of one hour's duration, with a catch of 177 lobsters averaging 7 pounds each--a total of 1,239 pounds. These tows were made in Area "F" (see chart).



M/V Delaware, Cruise 16 (Feb. 27 to Mar. 10, 1956).

This cruise was one of a series designed to explore the offshore deep-water areas for commercial concentrations of the lobster (Homarus americanus). Gear used was a standard No. 41 otter trawl. Exploration was conducted in six areas, in the 100- to 400-fathom depth range along the edge of the continental shelf, from the vicinity of Hudson Canyon, eastward to the vicinity of Lydonia Canyon. A total of 38 tows was made. In general, catches were small in Areas "A" through "E" but large in Area "F."

Offshore tagging of lobster was continued--105 were tagged and released where caught, and 200 lobsters were turned over to the Commonwealth of Massachusetts and the State of Rhode Island for tagging and release off Scituate, Plymouth, and Narragansett Bay. Among these were 92 large egg-bearing females.

No significant catches of other fish were made.

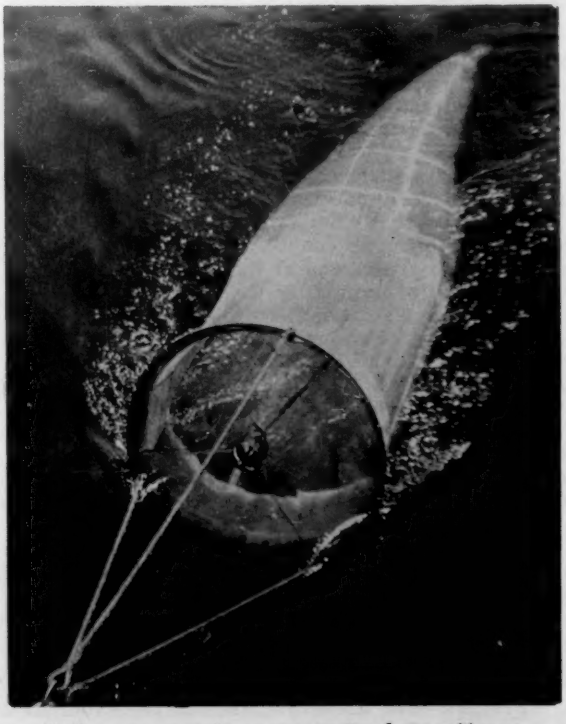
The Delaware will continue deep-water explorations at the edge of the continental shelf from Hudson Canyon southward on March 19, when the vessel's departure for Cruise 17 was scheduled.

North Atlantic Fishery Investigations

DISTRIBUTION OF HADDOCK EGGS AND LARVAE ("ALBATROSS III," Cruise 71): To determine the distribution of haddock eggs and larvae, temperature and salinity, and the general circulation pattern in the Gulf of Maine and Georges Bank area was the purpose of Cruise 71 of the Service's research vessel Albatross III. The vessel left its home port of Woods Hole, Mass. February 20 and returned on March 2.

Operations were conducted on Georges Bank and Browns Bank, and in the Gulf of Maine. Approximately 2,000 miles of continuous plankton tows were made at the surface and 10 meters with Hardy Plankton Recorders. A total of 183 bathythermograph lowerings, 100 salinity samples, and 12 surface tows with the standard meter net were made; and 5 samples of eggs were hatched out for identification purposes. A total of 720 drift bottles were released throughout the area.

Haddock, cod and plaice eggs; herring, cod, and blenny larvae were found. Haddock eggs were found only on Northern Edge of Georges Bank along with cod. Only 2 eggs were found on Browns Bank and these were cod.



Plankton nets are used to capture samples of eggs and larvae.

North Carolina

FISHERY TRENDS, 1955: In North Carolina during 1955 landings of shrimp, menhaden, hard crabs, and bay scallops increased but those of food fish, soft crabs, hard clams, and oysters dropped as compared with 1954. The table is a summary of the North Carolina landings of fish and shellfish for 1954 and 1955 as reported by the North Carolina Department of Conservation and Development.

Species	1955	1954
Shellfish:		
Oysters (bu., state) . . .	111,520	126,782
Shrimp (lbs., heads off).	5,777,300	5,202,049
Clams (bu., U.S.)	6,653	48,332
Crabs, soft (doz.) . . .	6,402	37,971
Crabs, hard (bbls.) . . .	76,299	43,646
Bay scallops (gal.) . . .	7,536	5,315
Finfish:		
Food fish (lbs.)	27,472,138	32,003,874
Menhaden (lbs.)	178,602,600	136,007,500

Shellfish: The shrimp fishing season in North Carolina waters opened on May 11, 1955. The total catch increased over that for 1954 and a better price prevailed during the early months of the season. During August 1955 a very severe hurricane completely disrupted fishing activity for two full weeks, and in September two more hurricanes completely demolished several fish houses along the coast and damaged many others. All three storms occurred at the height of the shrimp fishing season and the catch was greatly curtailed. Prices on the whole averaged better than for the 1954 season.

The catch of hard crabs was good in 1955 and the ex-vessel prices in the spring were the highest on record. For the early spring season the price varied from 10 to 12 cents a pound, with some bringing as high as 14 cents a pound ex-vessel. The increase in price over former years was due to a severe shortage of crabs in the Hampton-Newport News area of Virginia. The Virginia market normally controls prices in North Carolina.

The soft crab production declined drastically due largely to the good market for hard crabs. During the soft crab season the price of hard crabs was at its peak. Therefore, most of the fishermen turned their attention to that fishery. Production in 1955 was only about one-sixth of that for the year 1954.

Live crabs ready for steamer.

The hard clam fishery was depressed during 1955. The severe hurricanes of the past two years apparently had an adverse effect on the production.

Oyster production dropped from 126,782 tubs in 1954 to 111,500 tubs in 1955. It is felt that most of this loss should be attributed to the three hurricanes of 1955.

The catch of bay scallops was fair. Approximately one-third more bay scallops were produced in 1955 than in 1954, and ex-vessel prices ranged from $4.00 to $4.50 a gallon ex-vessel.

Finfish: The alewife season in the Albemarle County area was very good from the catch standpoint. However, the price dropped from $15.00 a thousand fish in

March to $2.00 a thousand in April. Finally there was no market at all except for the fish-meal processing plants. This fishery was depressed due to poor demand and unless some new ways are found to process and market the fish, future marketing prospects are poor.

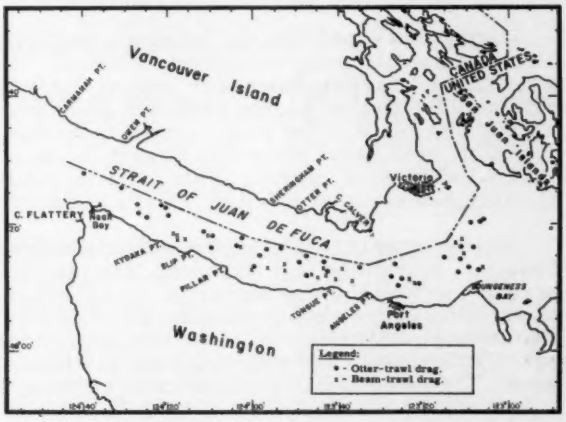
The year 1955 showed the highest menhaden catch since 1949. In November the fish were large with heavy oil content, but in December the fish were very small with a low oil content.

The production of other food fish was less, on the whole, than it was in 1954. Again, as in former recent years, it would seem that this was due to some extent to the fact that many fishermen turned to the more profitable shrimp fishery. The fall spot season was very poor as compared to former years, but the quality was better than for any other year in history. The mullet catch was not high as compared to other years. These last two species were no doubt affected greatly by the three disastrous hurricanes which hit in the middle of the season.

North Pacific Exploratory Fishery Program

BOTTOM FISH EXPLORATION IN STRAIT OF JUAN DE FUCA BY "JOHN N. COBB" (Cruise 25): To determine the trawlability of the bottom and the species and quantities of bottom fish available to commercial fishing methods at this season were the chief objectives of Cruise 25 (February 15-March 9) of the Service's exploratory fishing vessel John N. Cobb.

Commercial species of bottom fish were found to be at a low level of abundance in the Strait of Juan De Fuca at this season of the year, according to results of this 24-day exploration. The vessel completed a total of 61 drags on the United States side of the Strait.



M/V John N. Cobb, Cruise 25 (February-March 1956).

A total of 38 otter-trawl drags and 23 beam-trawl drags were made at depths from 44 to 149 fathoms between Cape Flattery and Dungeness Spit. Rough bottom caused considerable gear damage, as was expected, but a number of places were found with suitable trawling bottom which may be more productive at other seasons.

Most of the otter-trawl catches were predominantly scrap fish (dogfish, ratfish, skates, and turbot), totaling several thousand pounds in some drags. The largest catch was 4,500 pounds an hour. Up to 350 pounds of large ling cod and 400 pounds of true cod were taken with the otter trawl. Small numbers of rockfish, petrale sole, English sole, Dover sole, and pollock were present in the catches.

Three species of commercial shrimp--pink (Pandalus borealis), side stripe (Pandalopsis dispar), and spot (Pandalus platyceros)--were taken in the beam trawl in very small quantities. Catches ranged from 1 to 31 pounds per 1-hour drag. Stomach analysis showed that the true cod were feeding heavily on pink shrimp.

Although shrimp were found to be present over the entire area covered, no apparent concentrations were found.

North Pacific Oceanographic Survey

JACK MACKEREL RANGE EXTENDED: In August 1955 oceanographic research vessels from the west coast of the United States and Canada, the Hawaiian Islands, and Japan participated in a coordinated collecting expedition over the northern Pacific Ocean (NORPAC). While some time may elapse before data collected on this expedition are completely analyzed, some interesting results are available, according to the U. S. Fish and Wildlife Service Branch of Fishery Biology.

Fish and Wildlife Service biologists state that as a result of the NORPAC expedition knowledge of the range of jack mackerel has been greatly extended. This fish is of considerable commercial importance in California. Eggs and larvae collected on this expedition indicate the species spawns as far seaward as 1,200 miles off the Oregon coast. Prior to this expedition, eggs and larvae had been routinely collected 200 to 300 miles off the California coast and on occasion about 450 miles west southwest of Point Conception, Calif. The offshore extent of routine collections and not the distribution of fish determined these distances. Since eggs and larvae had been taken at almost all of the westernmost collecting stations during the spawning season, it was obvious that the spawning area in the past extended beyond these limits. Small numbers of eggs and larvae were collected also a little farther north than in previous years.

During this expedition the Service's exploratory fishing vessel John N. Cobb obtained a similar range extension for adults. Previously known from as far north as the Queen Charlotte Islands in British Columbia, adults were taken on this expedition in the Gulf of Alaska, which is some 200 miles farther north. They extended about 500 miles to the west, almost to Kodiak Island. The westernmost adults in the Gulf were about 700 miles directly north of the eggs and larvae collected 1,200 miles west of Oregon. This extended adult distribution agrees with the spawning range extension revealed by the egg and larvae distribution.

When attempting to explain the mechanisms responsible for fluctuations in the catch of species, such as the jack mackerel, it is essential to know the full extent of its spawning range, as well as its entire range. In considering the area that must be explored to accomplish this, cooperative cruises like NORPAC are the most practicable solution. The extensive data collected in this fashion augment the knowledge of several agencies, each of which may be investigating some particular biological or physical aspect of the ocean. The advent of NORPAC indicates a trend toward such cooperative surveys.

Oysters

CANNED OYSTERS INDUSTRY STANDARDS: Oyster canners of the Gulf and Atlantic Coast areas met in New Orleans February 28 and adopted industry standards for canned oysters. The definitions adopted by formal resolution of all of the 28 canners represented at the meeting were:

(1) Definition - Whole Oysters: For purposes of classifying canned oysters for grading, a whole oyster shall be defined as: "Any oyster consisting of a stomach section, a portion of the eye, or adductor muscle, and a major portion of the mantle." Some mutilation and cutting shall not be considered as a bar to classification as a whole oyster.

(2) Tolerance: The term "Oysters" shall be used to describe the canned product when it contains oysters, as defined, and not more than 15 percent broken oysters (pieces of oysters) by weight.

(3) Definition - Broken Oysters: The term "Broken Oysters" shall be used to describe the canned product when it consists of broken oysters or a mixture of broken and tiny oysters.

The canners also voted that February 28, 1956, be the date for adoption of these standards; that a copy of the resolutions be sent to the Food & Drug Administration, Department of Health, Education and Welfare, Washington, D. C., and New Orleans, La.; that wide and thorough publicity be given to these standards.

In addition, the group voted that on or about June 1, 1957, a new industry-wide meeting of the oyster packers shall be called to consider the revision of present temporary oyster standards and for the adoption of permanent standards for oysters as based on additional experience gained during the coming two oyster packing seasons.

Packing oysters.

Public Eating Places Survey

REASONS FOR NOT SERVING FISH OR SHELLFISH: The preliminary results of a U. S. Fish and Wildlife Service sample survey showed that of the 23,000 out of 150,000 restaurants and cafeterias which did not serve fish or shellfish meals, almost half said there just wasn't "sufficient demand." Some 20 percent of the restaurants and cafeterias in the "no-fish" group said they served a "specialty of the house"--obviously not fish or shellfish. Another 10 percent didn't have sufficient storage space. Less than 5 percent pointed out the difficulty of handling or cooking, keeping quality, or odor; and only 10 percent indicated "too costly" or "involved too much work."

Table 1 - Reasons Given by Public Eating Places for Not Serving Fish or Shellfish by Type of Establishment, 1955

Reason For Not Serving Fish or Shellfish	Totals		Restaurants		Cafeterias		Restaurants or Cafeterias in Hotels		Drug or Proprietary Stores		Other 1/	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No storage space	13,309	7.0	2,157	10.3	150	22.3	64	5.2	1,746	6.6	9,192	6.5
Insufficient demand	46,196	24.4	10,366	49.4	148	22.1	532	43.4	2,244	8.6	32,906	23.4
Sell only specialty	61,676	32.5	4,421	21.1	299	44.5	104	8.5	10,030	38.2	46,822	33.3
Too much work involved	4,613	2.4	819	3.9	75	11.1	-	-	298	1.2	3,421	2.4
Can't get fish in form wanted	596	0.3	521	2.5	-	-	-	-	-	-	75	0.1
No food or meals served	51,791	27.3	-	-	-	-	-	-	10,672	40.5	41,119	29.3
Don't know how to cook and serve	223	0.1	75	0.4	-	-	-	-	-	-	148	0.1
Too costly to serve	3,409	1.8	967	4.6	-	-	-	-	223	0.8	2,219	1.6
Strong odor	898	0.5	75	0.4	-	-	79	6.5	223	0.8	521	0.4
Difficult to handle	1,422	0.7	391	1.8	-	-	-	-	-	-	1,031	0.7
Fish doesn't keep	671	0.4	298	1.4	-	-	-	-	223	0.8	150	0.1
Other reasons	3,871	2.0	671	3.2	-	-	446	36.4	669	2.5	2,085	1.5
No answer	1,041	0.6	223	1.0	-	-	-	-	-	-	818	0.6
Total serving no fish or shellfish	189,716	100.0	20,984	100.0	672	100.0	1,225	100.0	26,328	100.0	140,507	100.0

1/ Includes drinking places, lunch counters, and refreshment stands.

Of approximately 35,000 drug and proprietary stores with fountain service, the survey indicated about 16,000 or 46 percent of them constitute a potential market for increasing consumption of fish and shellfish since they reported serving food other than fishery products. Of these 16,000 establishments, 64 percent indicated

"serve only specialty of the house" and 14 percent reported "insufficient demand" by the public as reasons for not serving fish meals. The more important reasons given by establishments classified as "other," consisting of drinking places, lunch counters, and refreshment stands, were "no meals served," "sold only specialty of the house," or "insufficient demand," in the order listed.

Regionally there are striking differences in the reasons for not serving fish and shellfish. Despite the closeness of establishments in the Northeast region to the source of fresh fish supply, over 40 percent of the public eating places in the region gave "insufficient demand" as the reason for not serving fish and shellfish meals in contrast to 20 percent of the establishments in the North Central, South, or West. The difference is primarily due to the high proportion (50 percent) of drinking places, lunch counters, and refreshment stands in the Northeast region, which are more likely not to serve fish in the first place.

When the establishments which do not sell fish or shellfish meals are classified according to the annual dollar volume of business, "sell only specialty" was an important reason (averaging about 35 percent) common to all. In category of eating places with sales of $100,000 or more, only 10 percent said "insufficient demand" was the reason for not serving fish and shellfish. In establishments whose sales volume was under $100,000, about one-third said "insufficient" was why they didn't serve fishery products.

Final results of the survey, which is being financed by funds provided by the Saltonstall-Kennedy Act of 1954, are scheduled for publication later this year. The U. S. Fish and Wildlife Service contracted with the Bureau of the Census to conduct the survey.

This study on reasons for not serving fish and shellfish in eating establishments is one part of a broader study of fish and shellfish consumption characteristics in public eating places. The findings are based on a nationwide scientific sample survey of approximately 4,500 establishments during the month of May 1955. The results were projected for the number of public eating places known to be operating in the United States.

Rhode Island

Rhode Island Fish and Shellfish Landings, 1954-55

Principal Species	Quantity		Value	
	1955	1954	1955	1954
	(1,000 Lbs.)		($1,000)	
Fish:				
Butterfish	2,126	1,396	169	143
Cod	799	1,071	50	57
Flounders:				
Gray sole	61	132	5	11
Lemon sole	21	26	4	5
Yellowtail	1,448	1,681	155	152
Blackback	1,454	1,282	109	103
Dab	232	253	19	24
Fluke	2,152	2,374	420	388
Other	8	4	1/	1/
Haddock	320	372	17	20
Herring, sea	663	1,052	17	22
Menhaden	14,341	17,945	179	223
Scup	5,903	5,715	273	250
Sea bass	437	298	46	30
Tilefish	1,181	1,067	79	67
Whiting	3,257	2,703	72	68
Other fish:				
For food	832	993	65	129
For reduction	73,401	58,901	626	509
Total Fish	108,436	97,355	2,325	2,201
Shellfish:				
Lobsters	284	283	129	116
Clams, hard, public beds	4,949	4,495	1,913	1,701
Scallops, bay	133	32	100	28
" sea	219	62	119	27
Other shellfish	831	835	69	50
Total Shellfish	6,416	5,708	2,330	1,924
Grand Total	114,852	103,061	4,655	4,125

1/ Less than $1,000.

Note: Mollusks (clams, conchs, oysters, and scallops) reported as pounds of meats instead of weight in shell.

FISHERY LANDINGS, 1955: Landings of fishery products in Rhode Island during 1955 amounted to almost 115 million pounds, valued at over $4.6 million ex-vessel. This was an increase of nearly 12 million pounds (11.4 percent) in quantity and $530,000 (12.8 percent) in value over 1954. Fish (including menhaden) for reduction and other industrial purposes (87.7 million pounds) was the leading item based on quantity and comprised 76.4 percent of the total landings in 1955. Hard clams, the most valuable single product landed in 1954 (ex-vessel value, $1.9 million) made up 41 percent of the total ex-vessel value.

The month of May in 1955 led all other months in landings with nearly 19.7 million pounds, followed by June (15.0 million pounds), and September (15.3 million pounds).

Although the 1955/56 crop of Narragansett Bay oysters is about exhausted, future prospects for the

oyster industry in Rhode Island are brighter than they have been for several years. The current shortage of 4- and 5-year old oysters in Narragansett Bay is largely due to damage done by hurricanes which had wreaked havoc in the leased oyster beds of the bay and in the Warren River. More damaging than any of the hurricanes was a heavy windstorm that swept across Long Island Sound in November 1950, destroying about 80 percent of the seed oysters. The 1950 loss has been felt continuously since then although there is now some optimism about the future of the industry on reports of a good 1955 "set" of seed oysters in and around Norwalk and Bridgeport, Conn.

Salmon

FIRST KNOWN ATTACK BY LAMPREY: The first known attack by a Pacific species of young lamprey on a coho salmon fingerling has been reported to the Fisheries Research Board of Canada Biological Station at Nanaimo, the Canadian Trade News (January 1956) announces.

The fingerling, about 3.5 inches long, was picked up in the Skeena River with a 6.4-inch lamprey firmly attached to it. When the lamprey was removed, a deep flesh wound was revealed.

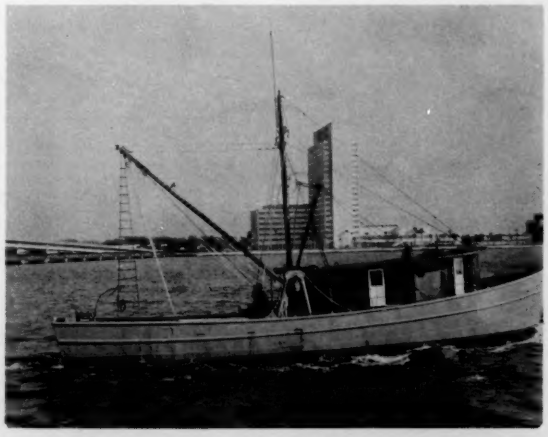
The young coho was assumed to be on its seaward migration. Examination of the lamprey by Dr. V. D. Vladykov, of the Quebec Department of Game and Fisheries, showed it was a fresh-water species and predaceous on fishes.

This species of lamprey has been reported in British Columbia from Cultus Lake, Fraser River, and Cowichan River.

South Atlantic Exploratory Fishery Program

DEEP-WATER RED SHRIMP CAUGHT IN SOUTH ATLANTIC BY "PELICAN" (Cruise 1): The first deep-water red shrimp taken by a vessel fishing in the Atlantic off the southeastern United States were brought in to Jacksonville, Fla., by the Pelican on March 9th. The Pelican is under charter by the U. S. Fish and Wildlife Service and is carrying on a deep-water shrimp exploration program with funds provided by the Saltonstall-Kennedy Act of 1954.

The Pelican's first exploratory cruise started March 1, but weather permittted only two days of trawling at depths of 1,000 to 1,500 feet off Fort Pierce and Daytona Beach, Fla. Deep-water red shrimp were taken in 8 out of the 9 drags made in this area with exploratory nets. The Pelican will continue fishing with



Cruise 1 of the Service's exploratory fishing vessel, the Pelican.

the larger 100-foot commercial nets for the remainder of the month in this general area to determine if the small catches already made can be increased.

Although the deep-water red shrimp are not yet being fished commercially, evidence that they form an unutilized resource of considerable magnitude in the Gulf of Mexico has been shown by explorations of the U. S. Fish and Wildlife exploratory fishing vessel Oregon. Their presence off the Atlantic coast is of special interest to the fishing industry because they may be sought by specially-rigged shrimp vessels during the season when shrimp are not available in inshore waters.

U.S. Foreign Trade

FISH-OIL EXPORTS IN 1955 AGAIN AT RECORD HIGH: Fish-oil exports from the United States reached a record 71,316 short tons in 1955, an increase of about 1 percent from the previous high of 70,817 tons in 1954. Western Europe was again the largest importer of United States fish oils, although the exports to that continent were down approximately 5 percent from 1954. This decrease was due to the almost 8-percent drop in exports to the Netherlands. In contrast, exports to Canada were up about 50 percent from the previous year, states the March 5 issue of Foreign Crops and Markets of the Department of Agriculture.

U. S. Fish-Oil Exports by Country of Destination, Average 1935-39, Annual 1952-55

Country of Destination	1955 1/	1954 1/2/	1953	1952	Average 1935-39
	(Short Tons)				
NORTH AMERICA:					
Canada	11,251	7,511	2,108	488	458
Cuba	83	126	87	100	155
Mexico	81	118	114	122	45
Other	1	-	1	3	71
Total	11,416	7,755	2,310	713	729
SOUTH AMERICA:	56	148	63	38	96
EUROPE:					
Belgium-Luxembourg	1,098	-	764	8	8
France	9	-	7	149	19
Western Germany	10,503	10,481	36,155	6,232	126
Italy	106	85	28	220	15
Netherlands	40,260	43,692	8,913	11,967	15
Norway	6,140	1,102	1,606	-	10
Switzerland	646	5,797	3,115	3,140	15
United Kingdom	881	1,376	299	-	77
Other	23	27	23	43	15
Total	59,666	62,560	50,910	21,759	300
ASIA:					
Philippines, Republic of	-	233	860	546	66
Other	55	51	37	20	24
Total	55	284	897	566	90
OTHER	68	70	53	3	19
Grand Total	71,336	70,817	54,233	23,079	1,234

1/ Preliminary 2/ Revised

* * * * *

SHRIMP IMPORTS, 1955: United States imports of all shrimp (fresh, frozen, canned, and dried) from all countries in 1955 reached the record total of 54.2 million pounds as compared with 41.5 million pounds for the same period in 1954. United States shrimp imports from Mexico for 1955 totaled 45.8 million pounds as compared with 34.9 million pounds for the same period in 1954.

Mexico again was the principal supplier of shrimp to the United States. In 1955 there was a considerable increase in shrimp imports from Mexico principally because towards the latter part of the year landings on Mexico's west coast were excellent and showed a reversal of the downward trend which had been reported the past few years.

Shrimp boats waiting for unloading or re-icing.

More and more countries are seeking to increase their shipments of frozen shrimp to the United States. Panama, the second most important supplier, increased its exports to the United States in 1955. Norway, Costa Rica, Japan, and Ecuador also stepped up their shrimp exports to the United States.

United States, Shrimp[1/] Imports (Fresh, Frozen, Canned, and Dried), 1954-55

Country of Origin	1955	1954	Country of Origin	1955	1954
	(1,000 Lbs.)			(1,000 Lbs.)	
Mexico by Customs Districts:			Peru	385	446
New Orleans	2,683	1,317	Iceland	49	26
Galveston	-	5	Sweden	2	5
Laredo	13,855	12,049	India	127	112
El Paso	20	119	British Honduras	-	2
Arizona	28,388	19,834	Argentina	-	528
San Diego	612	813	Spain	-	52
Los Angeles	194	545	Korea	-	15
San Francisco	36	121	Netherlands	-	23
Washington	-	81	Turkey	10	30
Puerto Rico	25	4	West Germany	7	3
Mexico Total	45,813	34,888	Nicaragua	8	1
Panama	4,224	3,663	Denmark	6	-
Canal Zone	40	-	Bahamas	30	-
Norway	222	153	Pakistan	4	-
Costa Rica	141	43	Surinam	3	-
Hong Kong	29	-	United Kingdom	1	-
Japan	906	439	Australia	20	-
Canada	102	58	British Guiana	1	-
Cuba	70	113	Italy	-	2
Colombia	364	391	Egypt	-	2
Ecuador	1,603	548	Chile	1	-
(Continued in opposite column)			Grand Total	54,168	41,543

1/ Mostly frozen.

Note: Also see Commercial Fisheries Review, April 1955, p. 50.

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GROUNDFISH FILLET IMPORTS UP IN FEBRUARY 1956: Imports of groundfish (including ocean perch) fillets during February 1956 totaled 11.0 million pounds compared with 8.5 million pounds imported during February of last year, according to the U. S. Fish and Wildlife Service. This represents an increase of 29 percent. The gain was primarily due to a 2.5 million-pound increase in the imports of fillets from Canada. Denmark and the Netherlands also exported more groundfish fillets to this country during February 1956 than during the corresponding month of last year. Imports of Icelandic groundfish fillets during February of the current year (809 thousand pounds) were 20 percent below the 1.0 million pounds reported for the same month of 1955. Imports of fillets from Norway, the United Kingdom, and West Germany were also lower.

Canada continued to lead all other countries exporting groundfish and ocean perch fillets to the United States with 9.4 million pounds during February 1956--85 percent of the total groundfish fillet imports during the month.

Total groundfish and ocean perch fillet imports into the United States during the first two months of 1956 amounted to 26.5 million pounds compared with 21.5 million pounds during the same period of 1955. Canada, with 19.2 million pounds, led all other countries exporting fillets to this country during the above period, followed by Iceland (5.1 million pounds), and Norway (1.2 million pounds).

Washington

PACIFIC HERRING MIGRATIONS: Further evidence of the migration of herring between the State of Washington and British Columbia feeding and spawning grounds has been obtained by the Washington State Department of Fisheries from herring tagged in 1955 among the San Juan Islands and at Holmes Harbor on Whidbey Island.

A total of 33 metallic tags inserted in the body cavity of herring caught and released in 1955 have been picked up by magnetic detectors sampling British Columbia catches from the lower east coast of Vancouver Island since November 1955.

Twelve tags were from a group of 8,000 herring released between Orcas and Lopez Islands in the fall of 1955, and nine from another lot of 153 tagged November 7, 1955, off the west coast of San Juan Island.

Eleven fish of 5,000 tagged in Holmes Harbor in April, 1955, also were captured in the Canadian fishery. One showed up from 1,000 herring released March 1955 in Agate Pass, near Bremerton, Wash. The recoveries came from the general vicinity of Active Pass, about 10 miles north of Sidney, B.C.

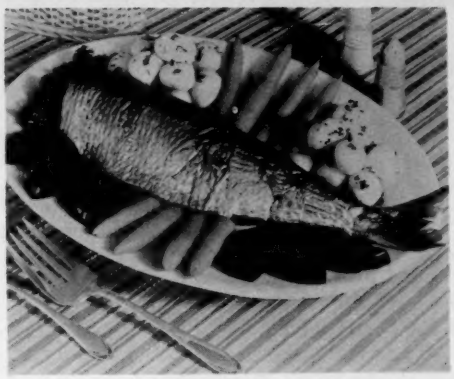
The tagging project is part of an investigation started three years ago on Puget Sound to determine migration, spawning, and feeding habits, and in particular to define the amount of back-and-forth movement between Canadian and United States stocks of herring.

Wholesale Prices, March 1956

Changes in the over-all index for all edible fish and shellfish (fresh, frozen, and canned) between February and March 1956 were slight (113.7 percent compared with 113.1 percent of the 1947-49 average). The index for March 1956 was lower by less than one percent when compared with February 1956, but higher by 12.3 percent than for March 1955.

The very slight increase of 0.4 percent from February to March in the drawn, dressed, or whole finfish subgroup index was due to higher prices for fresh whitefish and lake trout plus a slight increase for frozen halibut. These increases were largely offset by decreases in the ex-vessel price for large haddock at Boston (index down 9.7 percent from February) and lower prices for yellow pike at New York. Compared with March 1955, the subgroup index for March 1956 was higher by about 19 percent due to a better market for all the subgroup items except yellow pike which was down 24 percent.

The fresh processed fish and shellfish subgroup index shows a decline of only 0.9 percent from February to March 1956. The decline was due to lower prices at Boston for fresh small haddock fillets (index lower by 7.7 percent) and a very



Baked shad

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1956 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			Mar. 1956	Feb. 1955	Mar. 1956	Feb. 1955	Jan. 1955	Mar. 1955
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					113.1	113.7	122.3	100.7
Fresh & Frozen Fishery Products:					120.6	2/ 121.7	136.5	100.1
Drawn, Dressed, or Whole Finfish:					114.6	114.1	143.5	96.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.09	78.5	86.9	208.2	60.3
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.32	.32	98.0	97.5	89.2	74.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.61	.60	137.6	134.3	135.4	118.0
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.82	.73	204.5	181.0	2/ 171.0	167.3
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.80	-	161.8	131.4	141.5	131.4
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.82	.74	168.0	150.6	131.1	138.3
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.52	.55	123.1	129.0	117.3	161.8
Processed, Fresh (Fish & Shellfish):					126.5	127.6	133.7	104.2
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.30	.32	102.1	110.6	217.7	78.3
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.77	.77	120.9	121.7	118.5	98.0
Oysters, shucked, standards	Norfolk	gal.	5.62	5.62	139.2	139.2	136.1	117.5
Processed, Frozen (Fish & Shellfish):					112.3	116.5	117.6	96.8
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	102.1	104.7	106.0
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.29	.30	91.0	92.6	92.6	89.4
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	114.8	114.8	114.8	111.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.73	.78	113.0	119.6	121.1	85.6
Canned Fishery Products:					102.4	102.4	102.2	100.0
Salmon, pink, No. 1 tall (16 oz.), 48 can/cs.	Seattle	case	21.27	21.70	120.0	120.0	120.0	109.6
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/ cs.	Los Angeles	case	11.80	11.80	85.1	85.1	85.1	93.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	case	7.12	7.12	83.2	83.2	81.7	85.2
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	case	8.45	8.45	89.9	89.9	89.9	76.6

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/ Revised.

slight change downward in fresh shrimp prices. The March 1956 subgroup index was higher by 21 percent when compared with March 1955 due to higher market prices for all the items included in this group.

The processed frozen fish and shellfish subgroup index for March 1956 declined about 3.6 percent from February 1956 because of lower prices for frozen haddock fillets (down 1.7 percent) and shrimp (down 5.5 percent). The subgroup index for March 1956, when compared with March 1955, was higher by 16 percent due almost entirely to higher frozen shrimp prices in 1956. Frozen shrimp prices at Chicago in March 1956, although lower than in February 1956, were higher by 32 percent over March 1955 prices.

The canned fishery products subgroup index for March 1956 was unchanged from that of February 1956 but was 2.4 percent above that for March 1955. Both canned pink salmon and Maine sardines were priced higher in March 1956 compared with the same month in 1955, but these increases were offset by lower California sardine and tuna prices.

WORLD FISHERIES ABSTRACTS

More than 2,500 abstracts, covering every branch of fisheries technology, have now been published in World Fisheries Abstracts, a bimonthly review issued by the Fisheries Division of the Food and Agriculture Organization of the United Nations, Rome.

The periodical, which is now in its seventh year of publication, is published in three separate editions (English, French, and Spanish) and more than 200 periodicals and publications from 31 countries are regularly reviewed in it. The subjects covered include fishing boats, factoryships, fish harbors, fishing gear and methods, fish handling and preparation, packaging, processing plants, fresh and frozen fishery products, ice manufacture, salting, drying, smoking, marinating, canning and other processing methods, byproducts, seaweeds, chemical analysis, and nutritive values of fisheries products.

The abstracts, which are frequently illustrated, are printed in such a way that they may be cut out and filed for ready reference. Nearly 600 of the 2,500 cards refer to fresh and frozen fishery products, more than 400 to fishing boats, nearly 400 to fishing and methods of capture, and more than 200 each to such subjects as salting, drying, and byproducts. There are nearly 200 dealing with canning, etc., and chemical analysis and composition, while some 150 are concerned with handling and processing, and more than 100 with fish and fisheries in general.

Copies of most of the back numbers are also available. Write to the Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, for further information.

International

INTER-AMERICAN SPECIALIZED CONFERENCE ON CONSERVATION OF NATURAL RESOURCES

MEETING ON THE CONTINENTAL SHELF AND MARINE WATERS: The Inter-American Specialized Conference on Conservation of Natural Resources: The Continental Shelf and Marine Waters, opened in Ciudad Trujillo, Dominican Republic, on March 15. The meeting was called pursuant to a resolution of the Tenth Inter-American Conference at Caracas in March 1954, for the purpose of studying various juridical, economic, and scientific problems related to the continental shelf and ocean waters of the western hemisphere.

Assistant Secretary of State for Inter-American Affairs Henry F. Holland was designated Chairman of the United States delegation to the Conference, the Department of State announced March 9. Ambassador John C. Dreier, U. S. Representative on the Council of the Organization of American States, was designated Vice Chairman of the delegation.

Other United States delegates were: William C. Herrington, Special Assistant for Fisheries and Wildlife, Department of State; Ralph L. Miller, Chief of the Fuels Division, U. S. Geological Survey, Department of the Interior; and William Sanders, U. S. Representative on the Inter-American Council of Jurists.

The following were appointed United States Advisers to the delegation: James E. Barr, Executive Secretary, Shrimp Association of America, Brownsville, Tex.; Stanley L. Beck, Lt. j.g., Office of the Judge Advocate General, Department of the Navy; Wilbert McL. Chapman, Director of Research, American Tuna Boat Association, San Diego, Calif.; Robert E. Hardicke, American Petroleum Institute, New York City; Rear Admiral Harold A. Houser, USN, Office of the Judge Advocate General, Department of the Navy; Milton J. Lindner, Fish and Wildlife Service, Department of the Interior, Mexico, D. F.; John Lyman, Chief, Division of Oceanography, Hydrographic Office, Department of the Navy; Oscar E. Sette, Office of Oceanic Research, Fish and Wildlife Service, Department of the Interior; Arnie J. Suomela, Assistant Director, Fish and Wildlife Service, Department of the Interior; Fred E. Taylor, Office of Special Assistant for Fisheries and Wildlife, Department of State; Edwin Thomasson, Geological Survey, Department of the Interior; Marjorie M. Whiteman, Assistant Legal Adviser for Inter-American Affairs, Department of State.

Henry Allen of the Office of International Conferences, Department of State, was secretary of the delegation, and William G. Bowdler of the Bureau of Inter-American Affairs, Department of State, was technical secretary.

FOOD AND AGRICULTURE ORGANIZATION

DESTROYING A MYTH ABOUT TILAPIA: Since the end of the war the world has become conscious of the "wonder fish"--tilapia (Tilapia mossambica). It has recently been talked about so much that some people are beginning to believe that if there is anything a fish can do the Tilapia mossambica can do it too, says the Food and Agriculture Organization.

Tilapia mossambica, which only breeds and can only live in tropical and semi-tropical areas, starts off with a lot of unusual qualities. It is

monogamous and it will breed in fresh, salt, or brackish water whether running or still. On top of that it is a mouth breeder; when the eggs have been laid and fertilized the mother fish takes them into her mouth and holds them there until they have hatched and gained some degree of independence more than a week later. Then for maybe another week the young fish continue to stay near the mother

Tilapia (Tilapia mossambica)

and at moments of danger will return to take cover in her mouth. Tilapia mossambica is omnivorous. It feeds especially on plankton and vegetation, but it will also thrive on artificial foods such as the waste of rice, soya, and cocoa and various flours and oil cakes, reaching a weight of 4.6 to 5.3 ounces at about 10 months and sometimes going on to grow up to a weight of about two pounds in a period of years.

Its ready breeding in unfavorable situations and its rapid growth to edible size in the early part of its life give the Tilapia mossambica the appearance of being ideally suited to fish farming and the apparent advantage given to the young fish by their unusual incubation, their habit of taking refuge in their mother's mouth in moments of danger are the foundations of the "wonder fish" legend.

Until 1939 the Tilapia mossambica was only known to exist in Mozambique and down part of the east coast of Africa. Then one day in 1939 five lone Tilapia were found swimming in a lagoon in Java. No other Tilapia mossambica had ever been reported in this area and none had ever been caught in the thousands of miles of ocean lying between Indonesia and Africa, the land of their origin. But there they were and while the ichthyologists were still puzzling over the manner of their arrival, the Japanese invasion of the East Indies in 1940 seriously interfered with trade in the milkfish or Chanos fry, which had been the backbone of the thriving fish culture industry of the area. The Tilapia mossambica had arrived mysteriously but very opportunely.

During the war the descendants of the five original immigrant Tilapia mossambica, and possibly of other Tilapia which had arrived just as mysteriously but which had not been discovered, spread out across the islands of Indonesia, Malaya, and up as far as Taiwan.

After the end of the war the Tilapia continued its travels with the assistance of the Food and Agriculture Organization of the United Nations. In quick succession it was taken to Borneo, the Philippines, Jamaica, Thailand, the Dominican Republic, India, and Haiti, to name only a few of the countries.

As a populator of areas where few fishes had been known before, Tilapia mossambica was a resounding success. In Taiwan since 1946 it has become a common fish in open waters throughout the Island. By 1953, only a year after it was introduced to the Island, it made up 80 percent of the catch from certain lakes in Ceylon. Introduced into Haiti in 1951, it now makes up 90 percent of the catch from the open water of the Artibonite Valley.

Then it was discovered that the Tilapia mossambica would flourish in flooded rice fields and some observers found that in the presence of the fish the rice yields were increased--although other observers said the yield was unchanged and a third group said the yield was decreased.

With its unusual qualities, its mysterious arrival in Indonesia, and a few impressive figures like these, it is easy to understand how the inflation of the Tilapia mossambica's reputation started and why it is still going on.

But unfortunately, say serious workers in the field of fish culture, the Tilapia cannot support its reputation and is quite unsuitable as the mainstay of a serious fish-culture industry. It is a useful odd-job fish, a pleasant and dramatic introduction to fish farming for the inexperienced worker; it is more of a "toy fish" than a "wonder fish."

So as gently as possible they are trying to tear down the impressive structure of myth which this little fish is carrying.

They are being gentle because although not an adequate basis for a fish culture industry, the Tilapia mossambica can be quite valuable as a part of some fish culture industries and is often suitable for release in inland water areas. In the fish-culture industry it is an excellent fish to raise the interest of new fish farmers. These people are often not very enthusiastic about the industry and do not manage their water areas very seriously; but even though neglected the Tilapia will give quite good production and raise the fish culturist's enthusiasm for more serious farming. In certain countries they can be of value as a fill-in where the varieties of fish already in the streams and lakes are not exploiting all the food potential of the water areas. They are useful in the small ponds attached to individual farms where addition of nutrients to the ponds is haphazard and spasmodic. It is a good "forage" fish for larger fish which cannot make direct use of such foods as pond weeds on which Tilapia mossambica will thrive.

One of the main disabilities of Tilapia mossambica is low yields as compared with most other fish used in fish-culture industries. Certainly it grows very quickly to an edible size, but then its growth slows down very much. A good yield can be obtained only after very heavy stocking of a pond. Since Tilapia begins to reproduce at an early age, and then breeds prolifically, there is a possibility that, in the absence of careful control, a pond may become overstocked with young fish which will too vigorously compete for available foods for any of them to reach marketable size.

And the mother Tilapia mossambica's protection of her infants by taking them in her mouth is not very effective in practice. Where predatory fish are present, the Tilapia mossambica are among the first fish they eat, whether swimming on their own or sheltering in their mother's mouth.

Another reason for the gentleness with which FAO wishes to deflate the Tilapia mossambica's reputation is that while this species may have no great future in fish culture, some of the other species of Tilapia, and nearly 100 are known, may have much more future.

Two other species in which FAO is particularly interested are Tilapia melanopleura and Tilapia macrochir which at present are cultivated in the Belgian Congo, French Equatorial Africa, the Cameroons, and in certain ponds in East and South Africa. The two species have different feeding habits and are raised together in various proportions according to the abundance of the vegetation which is eaten by T. melanopleura. Under this system of culture, annual yields exceeding about 5 metric tons per acre have been reported.

The writer of an outline survey of the Tilapia family has this to say: " ... the great qualities of Tilapia .... should not cause it to be regarded as a miraculous fish whose introduction everywhere could only be beneficial and represent the ultimate in hydrobiology and fish culture. Although the enthusiasm for this species must be brought into more normal proportions, the species will, nevertheless, still be of great importance because the rearing of Tilapia affords an important source of protein food which can have great extension in tropical countries, by cultivation as well as in open waters, in fresh waters as well as brackish, and in contributing to the struggle against mosquitoes.

"There are numerous species of Tilapia whose qualities, however, are widely different; according to Bonlenger (1909-16), there are 94 species and others have since been found. While a good understanding of the biology, ecology, and cultivation of three species of the genus Tilapia (T. mossambica, T. melanopleura, and T. macrochir) has been gained, practically all the other species are as yet insufficiently known, notably in respect of their ecology and the possibility of cultivation. It is, therefore, uncertain that these species are the best in all circumstances. Moreover, the techniques of cultivation of Tilapia, dating from World War II, are too recent to be established.

"There is here a great field of research for biologists and fish culturists who in recent years and in many countries have directed their attention to this completely new problem of Tilapia."

Angola

FISHERY PRODUCTS AND BYPRODUCTS MANUFACTURE AND EXPORTS: The manufacture or production of finished fishery products and byproducts in Angola has climbed from 41,959 metric tons in 1949 to 85,349 tons in 1953 and 93,647 tons in 1954. For the first six months of 1955 it amounted to 41,220 tons.

Angolan exports of fishery products and byproducts in 1954 placed third, after coffee and diamonds, in value; and there are indications that further substantial increases may occur during the next decade, reports the United States Consulate at Luanda in a February 22 dispatch. Exports in 1954 included 52,690 metric tons of fish meal (valued at US$6.9 million); 15,074 tons of dried fish (valued at US$2.5 million); 11,416 tons of fish oil (valued at US$1.8 million); and 1,828 tons of canned fish (valued at US$1.0 million). The combined value of these fishery products and byproducts exports amounted to US$12.2 million in 1954 as compared to US$5.6 million in 1950 and US$2.6 million in 1946.

The United States is Angola's best customer, taking a large portion of the fish meal exports.

Australia

SHORE-BASED WHALING, 1955: The Australian whaling season, which started on June 3 and ended on September 19, 1955, was one of the most successful to date. The average oil yield per whale was a record one at 51.77 barrels (48 U. S. gallons per barrel), and consequently the total oil production did not fall in proportion to the

reduction in quota of 100 whales each for the Point Cloates and Carnarvon stations. Total oil production reached 4,575,966 U. S. gallons, compared with 4,807,027 gallons in 1954, while the total Australian quota was reduced from 2,040 humpback whales in 1954 to 1,840 in 1955.

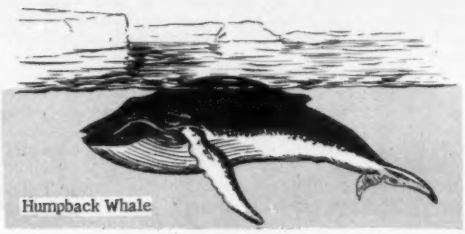

Humpback Whale

Table 1 - Whaling Results for Australian Shore-Based Stations, 1954-55

Item	1955	1954
Number of stations operating	5	5
Whales taken (number). . .	2/ 1,840	1/ 2,039
Average length (feet)	40.8	39.8
Oil production (barrels) . .	95,258	100,068
Yield/Whale (barrels) . . .	51.77	49.1

1/ Includes 1 blue whale, others all humpback.
2/ Excludes 1 minke whale and 6 humpback taken for scientific purposes; all humpback.

Gross value of the 1955 season's catch was estimated at US$4.4 million, comprising US$3.7 million for oil and US$0.7 million for the 6,358.7 long tons of meat meal and dried solubles produced during the season.

Belgium

SHRIMP FISHERIES: The shrimp catch by Belgian fishermen averaged about 4,470,000 pounds yearly during the 1952-54 period (table 1). The catch consists of the small size shrimp (250-350 heads-on to the pound) common along the shores of Western Europe. The ex-vessel value during the same three years averaged about US$1,000,000 yearly, a February 14 dispatch from the United States Embassy in Brussels reports. The species caught is the one known as gray shrimp (Crangon crangon L.).

Table 1 - Belgian Shrimp Catch, 1952-55

Year	Quantity	Value
	1,000 Lbs.	1,000US$
1955.....	4,147	950
1954.....	3,337	848
1953.....	4,324	1,040
1952.....	5,748	1,043

The areas fished are located some 8 to 10 miles off Belgium and in the open sea off the Netherlands coast. Shrimp fishing is engaged in throughout the year, but the size of the catch is more important between the months of April to October (67 percent of the catch is made during that period). The principal shrimp fishing ports for the years 1952-54 were: Zeebrugge reported 65 percent of the annual landings; Ostend, 26 percent; Nieuport, 8 percent; and Blankenberghe, 1 percent.

At the end of 1954 the shrimp fishing fleet comprised some 151 coastal motor cutters having from 20 to 100 horsepower and a gross tonnage of 10 to 35 tons. The total tonnage of the shrimp fishing fleet at the end of 1954 amounted to 2,532 gross tons. The boats are owned primarily by individuals or partnerships, although some are the property of fishing companies. The crews total from 2 to 4 fishermen per boat. The size of the shrimp fishing fleet has declined continuously in recent years.

This decline in the shrimp fishing fleet is attributed, in part, to the high operating cost of the boats, which are from 10 to 30 years old. The catch is reported to be declining as a result of intensive fishing which has been carried on during recent years. Lack of working capital available to a large number of individuals or small groups of fishermen has handicapped, to a degree, replacement or rehabilitation of a number of the boats.

The gear used for shrimp fishing consists of floating trawler nets ("petit chalut a plateaux") with an average length of approximately 39 feet and a mesh stretched lengthwise of about 0.9 inches.

Practically all of the shrimp catch is marketed as boiled shrimp. The shrimp are boiled in salt water on the boats. The amount canned or frozen is reported to be negligible and the little preserving that is done is carried out at general fish-processing plants. Practically all shrimp are retailed unpeeled at approximately US$0.54 a pound. Some are peeled by the retailers and are sold at US$1.82 a pound.

Exports of shrimp (262,276 pounds, valued at US$85,720 in 1954) represent only a small fraction of the catch and for the years 1952-54 amounted, on an average, to approximately 5.6 percent by volume and 7.6 percent by value. The principal country of destination was France and very small amounts went to other countries. No exports to the United States were reported.

The only assistance granted by the Belgian Government is that provided for by the law of August 23, 1948. This assistance is applicable to the fishing industry in general. According to this law the reimbursement of a loan advanced by an authorized bank may be guaranteed by the Government. The same guarantee may be extended for the purchase in Belgium or abroad of new fishing boats or for the placing of a new motor in existing hulls. In addition, the Government may pay for a portion of the interest due on loans up to a maximum of 50 percent of the interest rate. If the commercial banks are not desirous of concluding a loan, the Government may advance the loan under the conditions described above. There is a strict prohibition against foreign vessels engaging in shrimp fishing in Belgian ports and no foreign capital is invested in the industry.

Increasing costs of operation and declining catches have created a situation which is not particularly favorable for the expansion of Belgium's shrimp fishery. There is considerable resistance to modernization of existing equipment, although it is generally recognized that the present fleet is too old. Partly as a result of Netherlands price competition, the shrimp fishing industry claims that it does not make a sufficient profit at the present time to warrant an increase in its debt in order to purchase new equipment or rehabilitate old equipment. This situation has created somewhat of a dilemma and one which will result in a continuing decrease in the size of the shrimp fishing industry or the adoption of steps toward rationalizing the industry. It is reported, for example, that studies are being made to ascertain the possibilities of adopting shrimp boats for increasing other types of fishing during the off-season.

Note: Values converted to US$equivalents on the basis of 50 Belgium francs equal US$1.

Canada

BRITISH COLUMBIA SALMON FISHERMEN'S INCOME: Salmon purse-seiners and gill-netters earned more for their fishing efforts in 1954 than in 1953, but salmon troll fishermen made less money in the same period, according to a progress report on the economic survey of the salmon fishermen of British Columbia in 1953 and 1954.

The report covers a two-year investigation of changes in salmon fishermen's incomes from one year to the next, and factors affecting them. It was initiated at the request of fishermen and fish processing associations. It was begun in 1953 by the Fisheries Prices Support Board. Research was continued in 1954 by the Markets and Economics Service of the Department of Fisheries, that agency's Trade News (January 1956) states.

Pointing out that nearly 12,000 fishermen depend on salmon fisheries, which account for two-thirds of the landed value of all fish on the Canadian west coast, and, in finished form, provide between 2 and 3 percent of the total income of British Columbia, the report covers a survey of the three chief methods of salmon fishing: Purse-seining, gill-netting, and trolling. In making the survey fisheries economists matched 172 questionnaires covering 1954 salmon fisheries against those of the same fishermen completed for the 1953 season.

As the result of an increase in the proportion of the sockeye salmon catch, and a somewhat higher price for certain species, the 1954 salmon catch, although smaller in volume than 1953, yielded more income to salmon fishermen and brought the total salmon catch value to its third highest level in history.

Salmon gill-netters in 1954 shared a total of C$10,600,000, of which nearly 60 percent was for sockeye. According to the report, gill-netters included in the survey showed an average gain of C$152 in net cash income after deducting expenses, when compared with that of 1953. Purse-seine fishermen in 1954 divided C$9,100,000, of which sockeye salmon contributed 45 percent. The average increase in net income to purse-seine captains reporting was C$866, or 13 percent over the 1953 figures. Assistants in purse-seines showed an increase of C$326.

Troll fishermen, relying chiefly on coho and spring salmon, which provide 98 percent of their total catch, received about C$2,500,000 from the 1954 fishing, in which the catch of these species was considerably lower than that of the previous year. The survey showed that the net income for trollers declined by an average of $96 or 4 percent less than the 1953 figures.

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FISHERY COURSES FOR BRITISH COLUMBIA FISHERMEN: Thirty British Columbia fishermen went back to school for a two-week period, March 13 to 25, when the second fisheries short course was held at the University of British Columbia in Vancouver, the January 1956 Canadian Trade News reports.

Part of the British Columbia salmon trolling fleet.

The course, which was initiated last year under a grant from the Canadian Department of Fisheries, aims to broaden the knowledge of practising fishermen beyond their specialized branch. Fishermen are brought up to date on latest fisheries information and fishing methods, and listen to lectures on fisheries biology, legal problems of the fishing industry, and fisheries conservation. Cooperation between fishermen and government investigators in research and conservation programs is a major objective. Graduates from the school are expected to be able and willing to pass on to other fishermen in their areas any information gained from the course.

Lectures and demonstrations were given by instructors from the University faculty, Fisheries Research Board of Canada, the federal Department of Fisheries, and by individual specialists. Group discussions formed a considerable part of the course, and the class was scheduled to be conducted on various field trips, including a sea trip on a federal fisheries protection cruiser for demonstration of radar and other special equipment.

* * * * *

SALMON RIVERS PROTECTED BY LAW: The British Columbia Government has provided for close control of any project which might interfere with the free passage of fish in rivers of the Province, by amendment to the Fisheries Act in 1954. Prior approval by the Minister of Fisheries must be obtained before construction of any change or utilization of the waters. Guarantees of protection of fish are required, states a February 24 dispatch from the United States Consul in Vancouver.

By Provincial Order-in-Council, such protection was extended to all salmon and steelhead trout streams, and their tributaries, flowing into the Pacific Ocean, with the exceptions of the rivers listed below. Among the exceptions, are the Columbia and its tributaries, the Kootenay, Okanagan in part, and the Pend d'Oreille; the streams named are in general those where hydroworks already are constructed, or where salmon do not prevail, because of some natural barrier to their progress. Additions or exceptions may be made at any time by a new Order-in-Council.

Rivers Excepted From the Law: Stave River system above Ruskin, Allouette River system above the outlet of Allouette Lake, Jones Creek above the Trans-Canada Highway Bridge, Benaparts River above the Power Commission Dam, Bridge River above the confluence with the Yalakom River, Clearwater River above the falls 35 miles from the mouth, North Fork of the Quesnal River, West Road River, Nechako River above Grand Canyon, Willow River, Chilako River, Campbell River above Elk Falls, Cheakanns River above Garibaldi Station, Clowhon River system, including tributaries, Powell River system, including tributaries, Columbia River, Kootenay River, Pend d'Oreille River, Okanagan River above the S.O.L.P. Dam, and Kloiyah River.

Provided further, that unless the tributaries to the rivers and streams excepted above are specifically mentioned, such tributaries are not excepted.

Chile

FISHERIES TRENDS AND FISH MEAL PRODUCTION, JANUARY-NOVEMBER 1955: The Chilean Ministry of Agriculture reports that in the first 11 months of 1955 the 28 fish meal plants produced 30.1 million pounds of fish meal, utilizing 161.1 million pounds of fish. The Chilean whiting (Merluccius gayi) was the principal species used in the manufacture of fish meal. This species contributed 114.3 million pounds to the total quantity of fish utilized for fish meal.

The report also stated that the total fish catch for the 11 months was 336.2 million pounds with about 53 percent of this total used for human consumption.

During the first 11 months of 1955 the domestic over-all ex-vessel fish price for fresh consumption averaged about 3.75 U. S. cents a pound and the ex-vessel price for fish used for fish meal ranged from 1.0 to 1.7 cents a pound, according to a January 24 report of the United States Foreign Agricultural Service.

In order to prevent the extinction of whiting, the Government has prohibited the installation of new fish-meal plants from Coquimbo to Arauco, but permitting to the

north of Acoquimbo the use of sardines as raw material for meal. Some effort is being made to stimulate the plants to prepare fish for human consumption.

The 1955 international price of fish meal was excellent, resulting in a good income to exporters, but the price of other fish products, such as canned, smoked, salted, or frozen fish was low. This is one of the principal reasons for the increasing production of fish meal. The fish-meal trade complains against controls and the prohibition on building new fish-meal plants, stating that the fish used as raw material for meal are not suitable for human consumption, and further that the domestic channels for fresh-fish distribution are sufficient for normal demand.

The Ministry of Agriculture has requested the help of the Food and Agriculture Organization of the United Nations in order to obtain the service of an expert in market development and fish trade, and also is planning the organization of distribution cooperatives.

Ecuador

RECOMMENDATIONS OF FIRST NATIONAL FISHING CONGRESS: A preliminary report on the First National Fishing Congress held in Quito February 21-23 indicates that among the recommendations made were the following:

That operation of factory boats and mother boats in Ecuadoran waters be prohibited;

That bait fishing by groups of boats be prohibited unless the boats are at least a half a mile apart;

That domestic fishing companies be prohibited (beginning two years after passage of the proposed decree incorporating this recommendation) from chartering foreign flag vessels unless they own at least one Ecuadoran flag vessel for each foreign vessel chartered;

That measures be taken to restrict imports of foreign processed fish products, provided the domestic fishing industry adopts a production and price policy justifying such protection;

That no new shrimp concession be granted, that foreign flag shrimp fishing vessels now chartered by domestic companies be naturalized within six months, and that the Fishing and Hunting Department be empowered to regulate the number of shrimp vessels in use according to the amount of investment made by each company;

That a new General Fishing and Maritime Hunting Law be adopted, the administration of which would be centralized in a single government department;

That the funds allocated to the present Fishing and Hunting Department in the Ministry of Economy be substantially increased;

That a new commission to be called Comision Ecuatoriana de Fomento Pesquero (Ecuadoran Commission on Fisheries Development) be established, on which government, industry, and labor would be represented.

Resolutions were also passed endorsing the policy on territorial waters pursued by the Ecuadoran Government under the administration of President Velasco Ibarra, and the declaration issued by the Latin American delegates to the Inter-American Juridical Conference recently held in Mexico City.

Note: Also see Commercial Fisheries Review, April 1956, p. 31.

Egypt

SHRIMP FISHERIES: Official data on the production of shrimp in Egypt are unavailable, but an estimate obtained from trade sources places the annual catch at about 3,000 metric tons (6.6 million pounds), with an ex-vessel value of about US$600,000. The only firm exporting shrimp in 1955 reported that about 1.1 million pounds were exported (nearly all to France) in that year. Some sample shipments have been made to the United States. There is only one freezing plant in Egypt engaged in freezing shrimp. This plant has a capacity of about 4 metric tons a day. France purchases chiefly boiled whole shrimp packed in 2-pound and 5-pound cartons, and small quantities of shelled frozen cooked shrimp.

The fishery for shrimp is incidental to fishing for other varieties and is carried on throughout the year. The best seasons are reported to be from November to March, according to a February 6 dispatch from the United States Consul in Alexandria. Although there are shrimp found along the entire Egyptian coast, the best areas are near Rosetta and Damietta where the shore is quite sandy. It is possible that Red Sea areas are productive, but due to distances from large cities and the lack of refrigeration facilities, this source has not been exploited.

There are three types of shrimp found in Egyptian waters: "greys," 16 to 30 to the pound; "pinks," 21 to 50 to the pound; and "browns," 15 to 25 to the pound. (The count is probably based on heads-on weight.)

Reports from trade sources indicate that with modern vessels and processing facilities the catch could be increased to about 33 million pounds annually. Earlier reports from Egypt 1/ have indicated that one United States firm will or has invested in a firm that expects to catch and pack shrimp and spiny lobster tails for export.

1/ Commercial Fisheries Review, November 1955, p. 50.

France

SHRIMP FISHERY: The shrimp fishery of France is relatively small, with the average annual catch for the three years 1952-54 only 2,220 metric tons. There is no fishery exclusively for shrimp, and the catch is incidental to other fisheries. The sizes are reported to be small and consist of shrimp ("crevette grise") and prawn ("bouquet"). Practically all the catch is consumed fresh, the price is high, and the sizes smaller on the average than the shrimp caught by United States South Atlantic and Gulf fishermen.

The principal ports where shrimp are landed are Dunkirk and Boulogne in the North; Honfleur and Caen in the Seine region; and St. Nazaire, Le Croisic, La Truballe Marenne, and Ile d'Oleron in the Atlantic region. Shrimp fishing takes place all through the year, but catches are generally better in the summer months (May-October).

The export trade in shrimp is negligible with only 17 metric tons exported to England and Switzerland in 1954. There is little possibility of any future expansion of the industry, reports a January 26 United States Embassy dispatch from Paris.

Finland

REVIEW OF THE FISHERIES, 1955: The catch of fish in Finland during 1955 was close to 65,000 metric tons of which slightly over 50 percent consisted of the small low-priced Baltic herring. There is usually a large surplus of the Baltic herring in the spring months, when the quality of the herring is poor. At this period of the year part of the herring catch is dried for animal food, chiefly by simple open-air methods and assisted by a Government subsidy to aid fishermen, states a December 22, 1955, report from the United States Embassy at Helsinki.

The catch of fishery products in Finland consists of about 33 percent fresh-water varieties, but the fresh-water catch is about equal to the much larger salt-water catch due to the heavy catch of low-priced Baltic herring.

In 1955 Finnish fishing companies sent 4 vessels to Iceland to fish for herring in Icelandic waters. The total catch from this fishing was about 600 metric tons.

To promote the marketing of fish and to stabilize the seasonal fluctuations in price, the fishermen are planning the formation of marketing cooperatives in the principal coastal towns to operate freezing plants and selling rooms.

Exports of fish from Finland are insignificant. Imports consist chiefly of salt or sugar-cured herring from Iceland, canned sardines from southwest Europe and North Africa, and canned lobster meat from Soviet countries. Canned salmon, a new product on the Finnish market, is purchased from the Soviet Union.

Iceland

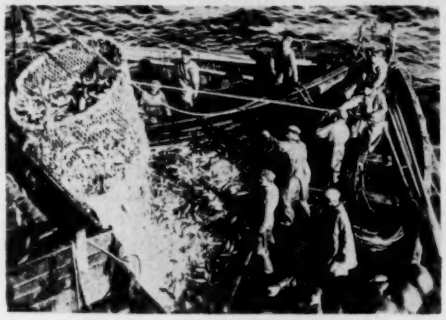
FISHERIES TRENDS, JANUARY-SEPTEMBER 1955: The 1955 catch through September continued to top 1954's bumper summer fish catch by a small margin. The haul of herring and ocean perch was equal to or better than that of the previous year. The market continued slow for frozen fish and stockfish, but very good for salted fish. The herring catch in quantity was the same but its value was better than the previous year.

Fresh Fish on Ice: Eleven of Iceland's 42 trawlers fished for the German fresh fish market in 1955, but it was generally unsatisfactory for the Icelanders. German trawlers caught so much ocean perch themselves that the prices were low. On several occasions Icelandic trawlers delivered their catches to Icelandic reduction plants rather than make the trip to Germany.

Frozen Fish: Although 10,000 metric tons less fish were diverted for freezing in 1955 than in 1954, the total for the first nine months of 1955 was still almost double that for the same period of 1953. Exports through September were lower than in 1954. As a result, the problem of frozen storage space became acute during the summer. It still was in November 1955, even though November was developing into a banner month with anticipated shipments of about 7,000 tons. The Soviet Union agreed to accept 8,000 over the minimum set by the USSR-Icelandic

Agreement and shipments to Czechoslovakia were going forward. Those to the United States continued markedly lower than a year earlier.

As a result of the excess stocks, some plants ceased to accept fish for freezing and in such cases boats had to divert their catches of ocean perch to the reduction plants. Lively discussion has resulted regarding ways and means of increasing storage capacity of present plants and building new ones. Although some concrete steps may result, they are not likely to be far-reaching, the general opinion being that the real problem lies more in increasing sales and making Icelandic fish competitive in price.



Brailing a good catch of herring.

The production of frozen fish for the first nine months of 1955 totaled 43,721 metric tons as compared with 41,976 tons for the same period in 1954.

Stocks were high in the third quarter of 1955, but that situation was expected to be relieved later in the year. To all intents and purposes the frozen fish market means the United States, Soviet Russia, and Czechoslovakia, who together account for over 90 percent of total frozen fish exports. Eastern Germany takes 5 percent.

Stockfish: Following the previous year's excellent sales of stockfish, there was a 16-percent increase in the total white fish processed in this manner in the spring of 1955. Through September 30, 1955, however, shipments were running well under half of the 1954 level, both in quantity and value. Over two-thirds of this went either to Africa direct or the United Kingdom for reshipment to Africa.

Salted Fish: The year 1955 has been a banner one for salted fish with prices good and a strong demand for all that Iceland produced or had in stock. This was to some extent foreseen, because the amount diverted to salting was increased from 81,000 tons as of October 1, 1954 to 97,000 tons as of October 1, 1955. The net weight of this fish after processing was 42,349 tons in comparison with 36,571 tons in 1954. Of the 1955 total, 26,629 tons was motorboat-caught; 15,720 trawler-caught.

1955 Herring Season: Although the total herring catch through September 1955 was almost precisely the same as in 1954 in weight (45,000 tons), the amount salted was almost double (32,000 tons in comparison with 17,000 tons). The income from the catch was expected to be correspondingly larger.

Fish Meal: Iceland's largest fish-meal sales are to the United Kingdom and West Germany, which together take almost 50 percent of the total. The rest is scattered to many customers. None is listed as going to the United States. There was less herring meal produced in 1955 than the previous year because much less north-coast herring was diverted to the reduction plants.

WHALING SEASON, 1955: The whaling season began May 29 and closed September 21. It was the best experience since the company conducting the whaling started operation.

Practically all of the meat has been sold frozen to the United Kingdom. Sweden is the best customer for whale oil, and Iceland for whale meal.

The good whaling results were obtained in spite of unfavorable weather during most of the season.

Table 1 - Icelandic Whale Catch, 1954-55

Type	1955	1954
	... (No.) ...	
Blue	10	9
Fin	236	177
Sei	134	92
Sperm	20	54
Other	-	1
Total	400	333

Table 2 - Icelandic Production of Whale Products, 1954-55

Product	1955	1954
	(Metric Tons)	
Oil	2,062	1,294
Sperm oil	187	492
Meat	1,899	1,438
Meal	1,281	853
Other 1/	128	123
Total	5,557	4,200

1/ Edible fibrous substance from the plaited undersurface of the rorqual (fin).

The company is permitted to engage in whale fishing for six months of the year but has thus far very seldom exceeded four months. Furthermore, the company has only 4 whalers, none of which are of the latest type, but its total possible catch is not limited.

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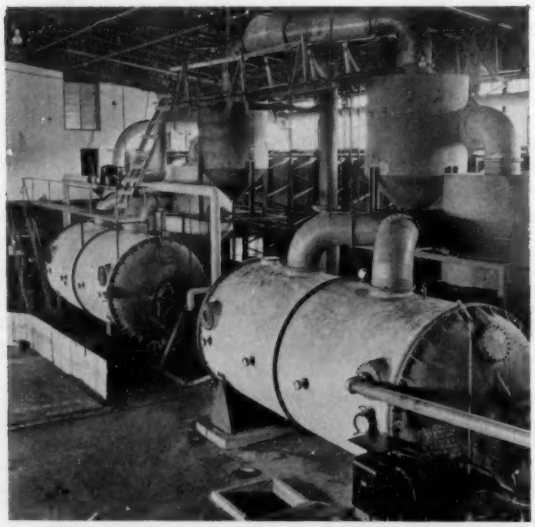
MARINE OIL PRODUCTION, 1955: Whale oil production in Iceland was up in 1955, due largely to one of the largest whale catches in the last decade (400 whales were killed as compared with 333 in 1954). Whale oil production in 1955 was 2,273 short tons as compared with the 1,426 tons produced in 1954. Sperm oil production was down from 542 tons in 1954 to 206 tons in 1955. Total whale and sperm oil production in 1955 was 2,479 tons, or an increase of 26 percent from the 1,968 tons produced in 1954, a December 5 dispatch from the United States Embassy at Reykjavik states.

Exports of whale oil through the end of September 1955 were 1,120 tons, all of which went to Sweden. The remaining stock was expected to be shipped by early in 1956.

Current prices for whale oil are from £85 to £87 a metric ton (US$216 to $221 per short ton) c.i.f. Those for sperm oil are about £70 pounds (US$178 per short ton) c.i.f. Prices fluctuated very little during the year and were about the same as the previous year.



A large and completely modern herring- and fish-processing plant in Faxa Bay, southwestern Iceland.

Although the herring catch to September 30 was almost exactly the same as in the same period in 1954, production of herring oil was expected to be smaller because a considerably larger proportion of the catch was salted. Herring oil production through the first 9 months of 1955 was 1,433 tons. Total production for all of 1954 was 4,178 tons; and for 1953, 5,467 tons.

As of December 5 no commitments had been made for large-scale exports of the 1955 herring oil production. In 1954 exports went largely to the Republic of Germany and Norway. Herring oil was currently selling at from £70 to £76 per metric tons (US$178 to $193 per short ton) c.i.f.

Production of cod-liver oil was reported at 10,031 short tons for the first 9 months of 1955 as compared with 11,303 tons during the entire year of 1954. Exports through September totaled 9,041 tons as compared with 9,436 tons during the same period in 1954. Almost a quarter of the 1955 exports went to Norway, with the remainder largely to the Netherlands, the United States, and the United Kingdom. The present December 5 price of bulk oil was about £82 per metric ton (US$230 per short ton) c.i.f. That for medicinal oil was around £113 per metric tons (US$287 per short ton) c.i.f., including the drums.

Ocean perch oil production through the first 9 months of 1955 was 3,086 tons as compared with 3,034 tons during the entire year of 1954. Practically all of the 1,667 tons of this oil exported through the first 9 months of 1955 went to Norway. The price of ocean perch oil December 5 was about £77 to £78 per metric ton (US$196 to $198 per short ton) c.i.f.

It is reported that the present marketing outlook for whale, herring, and other fish oils is good. There is a ready demand, and no drastic changes either in demand or prices are anticipated in the near future.

Israel

REVIEW OF THE FISHERIES, 1954: Israel's fishing industry was beset by a number of difficulties during 1953 which were reflected in a slight decline in the fish haul from 7,493 metric tons in 1952 to 7,458 tons in 1953. During 1954, however, output rose steeply by 21 percent to 9,000 tons, following the restriction of imports and other measures implemented by the Government.

Table 1 - Israel's Fishery Landings, 1950-54

Type	1954	1953	1952	1951	1950
	(Metric Tons)				
Lake fishing	989	781	1,046	927	707
Inshore fishing	610	599	585	625	788
Pelagic fishing	385	337	460	446	
Deep-sea fishing	1,413	1,226	953	884	1,040
Fish ponds	5,605	4,515	4,449	3,847	3,897
Distant-waters fishing by Israeli ships	-	-	333	1,397	487
Total	9,002	7,458	7,493	6,730	6,432

In view of the restricted supply of meat in Israel, fish constitutes one of the chief sources of animal protein. Local production during 1950 covered some 38 percent of total consumption, as compared with 30 percent in 1953. Much remains to be done, therefore, before self-sufficiency is achieved in this field, states the publication Israel Economic Survey, 1953-54, issued by The Economics Department of the Jewish Agency.

Current plans provide for a large expansion of production during the coming year. Eight new fishing trawlers ordered within the framework of the Reparations Agreement have already arrived and others are at present under construction. Each trawler is equipped with electronic devices for locating schools of fish. Fishing in distant waters, which was discontinued in 1953, is to be renewed on an increased scale. Large ocean-going boats, capable of remaining at sea for three months at a time, have been ordered for service in the Atlantic.

Particular importance is attached to the development of inshore fishing, which could provide several times the present haul. The decline in this area of fishing

was mainly responsible for the contraction of total output in 1953. Deep-sea fishing is also developing rapidly.

The expansion of the fishing fleet has also raised the question of establishing additional dock and service facilities. New space is to be provided, among other places, in the Kishon Harbour, together with a refrigeration plant, workshops, stores, and a slipway.

Table 2 - Israeli Fish Consumption and Imports

	1954	1953
	.. (Metric Tons)..	
Total Consumption:	23,900	24,990
Domestic Production	9,000	7,460
Imports	14,900	17,530
Percentage of Domestic Production to Total Consumption	38%	30%

Carp breeding in ponds has increased steadily during years and accounted for some 62 percent of domestic fish production in 1954. A trial shipment of tinned carp was dispatched to the United States at the end of 1954 and plans are advanced for exporting small breeding carp to Europe. Prospects in both markets are considered promising.

Japan

NORTH PACIFIC LONG-LINE SALMON FISHING: Since the published results of the experimental salmon long-lining by the Tenyo Maru had aroused extraordinary interest, the attitude of the Fisheries Agency on this question was being closely watched, the Japanese newspaper Nippon Suisan Shimbun (February 27) points out. The salmon long-line fishery, which had been a free fishery, was made subject to licensing by the Minister of Agriculture and Forestry by executive order, and it was made clear that, while vessels which had taken part in the fishery in 1955 would be licensed, those wishing to enter the fishery for the first time in 1956 would not.

According to the same newspaper for March 1, the authorities estimate that there are about 200 vessels that would qualify for licenses to long-line for salmon. Their operations would be limited to waters south of 48° N.

On February 21 the Japanese Fisheries Agency called a conference of cognizant department heads from Hokkaido and 14 prefectures on the following problems of the North Pacific salmon fisheries: (1) salmon long-lining; (2) salmon drift-netting south of 48° N., (3) penalties for vessels disregarding the regulations of the salmon drift-net fishery, and (4) the schedule for inspection of vessels taking part in mothership-based salmon fishing.

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TRAINING SHIP CATCHES TUNA IN HAWAIIAN WATERS: The Shimane Prefecture fishery training ship Shimane Maru, after carrying out its third cruise in Hawaiian waters, returned safely to its base at Miaki in Kanagawa Prefecture on February 7 with a full load of over 180 tons of tuna. The catch was in good condition and brought US$45,000, states Nippon Suisan Shimbun (February 27), a Japanese newspaper.

The ship sailed again from Misaki on February 18 to make its fourth cruise in the Indian Ocean. There are 13 students aboard from the industrial and fishery high schools of Shimane Prefecture. The Shimane Maru is expected to return to port late in April.

Kenya

SOUTH AFRICANS MAY ESTABLISH FISHING INDUSTRY OFF KENYA: The Kenya Government signed an agreement with South African businessmen in October 1955 to explore the Indian Ocean waters off Kenya for commercially-valuable fish. A small pilot company has been formed to explore Indian Ocean waters. The company is backed by considerable resources in money and equipment. Should the pilot scheme prove that there are sufficient fish to warrant the erection of freezing plants, the South Africans are prepared to invest about US$560,000 for fishing boats, processing plant, and distribution facilities.

Preliminary to the present project, the East African Research Organization founded in 1949 has made extensive studies of the movements, migratory habits, and other factors that may be valuable to the commercial interests. The Research Organization has found schools of bonito, yellowfin tuna, and skipjack.

At the present time Kenya's fishing industry is confined to coastal inshore waters and the catch from this source is estimated to be about 5,000 metric tons a year. In addition, the colony produces about 11,000 tons of fresh-water species from Lake Victoria. The catch of fresh-water fish includes 3,500 tons of tilapia. Although the demand for fish is good, the colony suffers from lack of modern distribution and freezing facilities, reports the South African Shipping News and Fishing Industry Review for November 1955.

The pilot scheme is to determine whether the ocean fish off Kenya's coast are commercially exploitable in sufficient quantities to justify a fish processing industry in the Colony. Kenya fishery experts are convinced, by their own experiments, that year-round open-sea commercial fishing is possible and that it can become a major economic factor and food source in the territories.

A report from Nairobi (Kenya) states that the Kenya Government is giving South Africans--who represent some of the largest fishing concerns in the Union--its full support and will lend them the research vessel Meniha for the pilot scheme, which is expected to cost about US$9,800. The South Africans will send their own crew and equipment to Kenya, including nets which are not imported into the Territory.

If the results are favorable when the scheme ends April 1956, the group will hold discussions with the Government regarding the formation of a company. Meanwhile, preparations are being made to schedule the fish-processing industry under the East African Industrial Licensing Ordinance.

It is impossible to calculate how much return the South African financiers will receive on their capital if they start in East Africa, but they will have an immediate market once marketing and distribution problems have been overcome, and will almost certainly be able to export later.

Many of the necessities for a commercial, open-sea fishing industry already exist. There are adequate landing facilities at Lamu, Malindi, and Mombasa; there is plenty of space on the coast for the erection of processing factories; electricity is fairly easily available around Mombasa and at other East African ports; the thousands of fishermen on the coast are a good source of labor and the registration fee for a trawler or motor vessel is only US$0.42.

Republic of Korea

ICE-MAKING MACHINERY TO AID FISHERIES ARRIVES: Machinery for ice-making plants to benefit the fisheries industry in a dozen communities of the Republic of Korea has arrived in that country under the aid program of the United Nations Korean Reconstruction Agency (UNKRA).

The equipment includes 20 ammonia compressors with a total capacity of about 1,000 tons of ice per day. Individual compressors range in capacity from 20 tons to 120 tons per day, a March 6 news release from the United Nations points out.

They will be sold to fisheries associations or private plants, most of them in ports. Among the communities scheduled to receive them are Pusan, Kunsan, Yosu, the island of Huksan-Do off the southwestern coast, the island of Yokchi-Do off the southern coast and the east coast towns of Kampo, Kanggu, Pyonghae, and Pango Jin.

They were brought to Korea as part of a $232,000 UNKRA project for importation of equipment to improve the handling of fish and prevent waste caused by spoilage. With the arrival of the recent shipments, procurement of ammonia compressors called for by the project has been completed.

Mexico

COAST GUARD TO ACQUIRE SEAPLANES FOR COASTAL PATROLS: The Mexican Coast Guard, according to the newspaper Excelsior, is intensifying its campaign against foreign fishing fleets in Mexican coastal waters. According to reports, the Coast Guard intends to acquire seaplanes for patrolling the Mexican coasts, a February 28 United States Embassy dispatch from Mexico points out.

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EXPORT DUTIES FOR SKINS, FINS, AND LIVERS OF SHARKS REDUCED: Effective December 1, 1955, the Mexican export duties for shark skins, shark fins, and shark livers were greatly reduced. The following ad valorem rates are now in effect with the former rates shown in parentheses:

15-13. Untanned shark skins, fresh, dry, or salted, 5 percent (15 percent)

15-30. Liver and liver scraps of shark and other kinds of fish, 3 percent (10 percent)

15-91. Shark fins, 5 percent (10 percent)

CORRECTION

In the January 1956 issue of Commercial Fisheries Review, page 53, under Mexico, the statement "Canned spiny lobster" is incorrect according to advice received from a Mexican authority. This authority states that spiny lobsters are not canned at Ensenada or elsewhere in Mexico. All the production is exported frozen. In table 4 the "Lobster, spiny" under "Canned" should be added to "lobster, spiny, cooked" under "Processed."

Netherlands

SHRIMP FISHERIES: Production of shrimp in 1955 amounted to 19,358 metric tons of which an estimated 275 metric tons was not marketed for failing to reach the minimum price. However, 1955 results were considerably better than in the immediate preceding years and the 1954 catch of 14,291 metric tons may be more representative of the period 1952-1955, a United States Embassy dispatch (February 7) from The Hague points out.

Exports of shrimp in 1955 totaled 2,207 tons (quantity landed in Dutch ports and destined for export), compared with 1954 exports of 1,516 tons.

The total catch of shrimp for the three-year period 1953-1955 was 50,241 tons. Of this amount, approximately 35,000 metric tons of small immature shrimp were used for the production of fish meal for poultry feed. The size of the whole shrimp ran between 275-315 per pound for export and 360-410 per pound for home consumpton. The local catch consists of "baby shrimp" as they are termed in world trade.

Shrimp exports during 1953-55 totaled 6,080 metric tons, valued at Fl. 12,956,000 (US$3.4 million), of which quantity almost 95 percent was exported to Belgium and France with each country taking almost equal amounts although the French preference was for unpeeled and the Belgian for peeled shrimp. The remainder went to West Germany and Great Britain for the most part. There were no more than relatively insignificant shipments to the United States in 1953 and 1954 (three tons each year) because the Netherlands shrimp are considered too small, soft, and tasteless for the American market. Exports were confined to peeled or unpeeled shrimp (fresh) with the latter accounting for between 70-85 percent of exports, depending on the selected year. There are insignificant exports of frozen shrimp during the hot months. Shrimp destined for export are cooked in heavily-salted water while those for domestic consumption are only slightly salted for reasons of taste preference.

The principal fishing areas are: (1) the Ems Estuary, (2) the coasts of the Provinces of North and South Holland, (3) the estuaries around the Province of Zeeland, and (4) the Waddenzee. The best catches are made from March through June and from August through November. The shrimp fishing fleet consists of very small cutters of about 26 feet in length and a tonnage of about 10.2. The annual number of vessels engaged in shrimping is about 350, the number being controlled by the Government through the issuance of licenses. The vessels usually have a keel but flat-bottomed craft are also in operation. The usual equipment is the otter-trawl or the beam trawl, depending on the composition of the sea floor. In the Ems Estuary, shrimpers also use special shrimp nets, the hose net. The vessels may or may not be equipped with engines, but the motors may not exceed 80 hp.

The catch is cooked on board the fishing craft immediately after being caught.

There are no factories engaged solely in the canning or freezing of shrimp and the little that is done is usually carried out at factories of the general fish-processing industry. A few individual shrimp wholesalers have freezing facilities of their own which are used only for that dealer's export stock and only during the hot months of the year. There is not, therefore, any systematic freezing of shrimp for export.

The processing of the smaller shrimp into fish meal is carried out by the regular fish-meal factories and also by small operators who undertake the drying before passing on the shrimp to the next stage. The fish-meal industry is situated in the Provinces of Friesland, Groningen, North Holland, and South Holland.

Under the supervision of the Marketing Board for Fisheries Products (a semi-official body representing all sectors of the fishing industry from production through sales), shrimp fishers pay a levy to a fund from which fund payments are made to fishermen for shrimp which do not reach a minimum price fixed by the Board. The Board's agents control the size and quality of landed shrimp while peeled shrimp are controlled by the Commodities Inspection Service. The Marketing Board also issues the required license to individual fishermen, a license valid for one calendar year. The licensing is primarily intended to keep a balance between production and consumption in order that the established minimum price policy will not be undermined. The Board may also indicate the ports at which shrimp must be landed and it may fix the quantities and varieties to be landed. The minimum size set for export has been $6\frac{1}{2}$ centimeters and that for domestic consumption has varied between $5\frac{1}{2}$ and $6\frac{1}{2}$ centimeters.

The potentialities for expansion of the shrimp industry as a whole are not believed to be favorable since the Government is interested in keeping the balance between present consumption and production. Since a great increase in consumption or exports is unlikely, it is not probable that production will be greatly expanded. This in turn creates little incentive for the development of a sizable canning or freezing industry. The labor supply (now short) also is a limiting factor in achieving a greater production and is especially noticeable in the peeling sector.

New Zealand

FISH SURPLUS: The New Zealand Fishing Industry's dilemma early in 1956, namely a serious glut of fish on the market, with frozen stocks up to capacity, and a generally inactive market, has been attributed to many factors. The industry largely blames the recent cut in the Australian import quota for New Zealand fish (which it states is even further aggravated by the current Australian wharf strike) together with the normal seasonal drop in local consumption in the face of this year's peak catch, while the public, although in agreement with the industry so far as the Australian import situation is concerned, claims on the other hand that the local situation of inadequate sales is a sign of successful consumer resistance against the needlessly high prices imposed by the industry.

The latest official published figures on New Zealand fish catches and exports are for the calendar year 1954. These indicate that on the basis of value 62 percent of the principal classes of fishery products marketed that year were exported. Spiny lobster or crayfish accounted for about 75 percent of the value of all exports and the majority of these went to the United States. Australia is the next importer of New Zealand fish products, but only absorbs by value about 12 percent of the total exports.

Recently, the Australian Government announced that its import quota of New Zealand fish would be reduced. This reduction in Australian import licenses has, according to the Secretary of the New Zealand Wholesale Fish Merchants' Association, "required New Zealand fishermen to reduce their catches for some weeks past," and indications by other members of the industry have been that in parts of the country where stringent catch limits have been imposed, in the absence of relief from the Australian quota, prices will have to be raised in order to give a fair return to the fishing industry.

According to New Zealand Government sources, some relaxation of the Australian import restrictions on New Zealand fish is expected soon.

The Fishing Industry states that "the first requirement for making fish available to the public is to provide a reasonable return to the fisherman whose costs of catching have soared in recent years." The policy of the industry is to make available to the New Zealand public all the fish that can be consumed in those areas to which it can be safely transported, and the industry emphasizes that only the surplus is exported. Lack of inland transport facilities is given as a major stumbling block to expanded domestic markets.

The industry further explains that the method of marketing, namely purchase by the wholesalers of practically all the fish landed by the fishermen, keeps the prices down because the fish is bought in large lots and what cannot be sold on the local market is frozen and stored for export. Included in the fish prepared for export, according to the trade, are a number of varieties which are not acceptable to the New Zealand public but for which there is a satisfactory demand abroad, especially in Australia.

Regarding the industry's obligation to the public, industry spokesmen complain that unfortunately the New Zealand public has a most marked preference for fresh fish and does not willingly purchase the frozen product. During the hot weather local consumption of fish in New Zealand is considerably lower than normal; and because this period is the heaviest catching season, if the fishing industry is to operate economically, a considerable portion of the catch must be frozen (and subsequently exported), states a January 30 dispatch from the United States Embassy at Wellington.

The Secretary of the Wellington Retailers' Association stated that New Zealanders were just not fish eaters and blamed the high fish prices on the public. "We have tried putting cheap fish on the market but the public just won't buy it. If they see fish cheap they think something is wrong with it. And they won't take the whole fish. They want them boneless and skinless. Retailers have to buy three pounds of fish for one pound for the public."

The public, faced with the fact of Australian restrictions, has considered the attitude of the New Zealand fish industry as negative in the extreme, especially the indications that the catches will be severely reduced and the standing overhead costs covered by higher local prices. The critics of the industry's policy state that there is great scope for increased sales locally and that the block to increased sales is the high retail price, not New Zealand eating preferences.

In the opinion of some wholesalers and retailers, the present overstocked conditions will inevitably force the price of fish down and there are already evidences of slight undercutting of wholesale prices.

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FISHERIES TRENDS: Most fishery products in New Zealand are produced for domestic consumption. However, exports of frozen spiny lobster (crayfish) tails to the United States have mushroomed with shipments amounting to almost US$3 million in 1955 as compared with none several years ago. There has been considerable interest by United States and New Zealand firms in this development and exports may increase further, states a United States Embassy dispatch (February 23) from Wellington. At the same time questions have been raised in Parliament as to possible overfishing of spiny lobsters and there has been some grumbling that exports to the United States have caused prices to rise in the domestic market.

The export market in Australia for New Zealand frozen fish was adversely affected by the imposition of reduced import quotas by Australia and has caused difficulty for the New Zealand trade. Stocks accumulated at the end of the year, and representations will probably be made to Australia to liberalize quotas. At the same time dissatisfaction has been voiced at the high retail prices and the poor quality of fish sold domestically; compared with meat prices, some fish is relatively expensive.

The waters around New Zealand abound in fish and prospects for exploiting this resource are being explored.

Norway

WINTER HERRING CATCH NEAR RECORD: The first phase of the Norwegian fat or winter herring fisheries off western Norway ended at midnight, February 14. The total catch of fat herring was estimated to be 865,800 metric tons, only 1,800 tons less than the record year of 1954. It is possible that the 1954 record will be exceeded when the final figures have been compiled. The ex-vessel value of the 1956 winter herring catch was close to US$28.3 million as compared with US$21.0 million in 1955. The sales value of the 1956 catch is close to US$56.0 million. About 80 percent of the fat herring catch was taken by purse-seiners.

Two of the purse-seiners landed almost 3,000 tons each, and 22 reported about 2,000 tons each, and 58 caught 1,500 tons each.

More of the catch this year than in 1955 will be utilized for fish meal and oil because of the strong market for these byproducts as opposed to only a fair market for salted herring.

The fishery for spring herring, which usually lasts until the end of March, was off to a good start. At the end of the first day of the season, February 15, the fishermen had landed nearly 30,000 tons, states the February 23, News of Norway, a publication of the Norwegian Information Service.

Pakistan

POTENTIAL MARKET FOR FISHING BOAT ENGINES: More than 1,000 fishing boats in the Karachi administration area and some hundreds on the Makran and Sind coasts of Pakistan may provide a lucrative market for manufacturers of fishing boat engines, if plans develop for the mechanization of the Pakistan fishing fleets, a February 17 news release from the Food and Agriculture Organization points out.

Most of the existing boats, which range from small craft to vessels of 60 feet over-all, are suitable for mechanization, according to a report on the "Mechanization of West Pakistan Fishing Boats," submitted by FAO to the Government of Pakistan.

The Report was written by four naval architects of the FAO Fisheries Division and is based on work carried out by them between 1953 and 1955, after FAO was requested by the Pakistan Government to make a study of "certain local types of fishing vessels used on the West Pakistan coast," with the object of improving the design of the boats so that they could be mechanized.

After extensive investigations and model tests, the naval architects found that most Pakistan fishing boats were comparable and, in many cases, superior--so far as resistance is concerned--to the design of fishing boats in Europe and North America. As a result, the architects found that the resistance of West Pakistan boats could be decreased by only 10-20 percent by means of improved hull design, compared with a decrease of 30-40 percent which they had usually found feasible in the ordinary fishing boats of western countries. The practical effect of such improvement is to increase the speed of the boat without adding to the power of the engine. Considerable savings can also be made in fuel consumption, sometimes as much as 30 percent if the speed is kept constant.

Most of the Pakistan fishing boats can be fairly quickly and easily mechanized. The naval architects have recommended that the small boats, such as the "tony," "dhatti hora," and the "ekdar," should be equipped with heavy-duty low-speed outboard motors of about 4 hp., with 12-in. extended shafts and bronze underwater parts. In the case of the bigger boats, especially the excellent "bedi" types which range from about 44 to 60 feet, it is recommended that inboard motors of about 20 hp. should be installed, preferably semi-Diesels or Diesels. Such engines would enable the boats to sail at about $7\frac{1}{2}$ knots.

The main suggestions made by the naval architects concerning structural modifications to boats are to strengthen them and introduce fixed decks, which would enable the boats to fish in rougher weather.

As so many of the fishermen themselves have become aware of the advantages of mechanization of their boats, and the policy of the Government of Pakistan is aimed at mechanization of the fishing fleets, conditions are favorable for the development of this market, if manufacturers are able to organize training in the operation, care, and maintenance of engines, and provide an adequate spare parts service.

The FAO report provides a valuable guide to the conditions and problems which exist in this potential market. It is a comprehensive document which deals in detail with the construction of new boats, mechanization of available boats, and technical and financial aid. It contains a wealth of technical detail in tabulated form as well as more than 30 diagrams on various aspects of boat construction, design, and mechanization proposals.

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SHRIMP FISHERY: Shrimp are found in commercial quantities on both the east and west coasts of Pakistan. The fishery for shrimp is being developed with the aid of a United States International Cooperation Administration technical advisor and the prospect for increased production is good. Prior to 1955 shrimp were taken in commercial quantities in the delta of the Indus River of West Pakistan and in the Brahmo-Ganges delta in East Pakistan. Smaller catches are taken along the coasts of both East and West Pakistan and also by damming tidal creeks in the eastern area.

The shrimp fishery is carried on throughout the year but the bulk of the catch is taken in the West Pakistan area during the months November to March. The east coast fishery is best from October to April and year-round from the dammed tidal creeks (called "besha badha" fisheries).

The fleet of shrimp boats consists of 150-200 small sail and nonmechanized craft. About 80 percent of the catch is taken by beach seines; 12 to 14 percent by tidal-operated barriers; and 6 to 8 percent by cast nets.

In 1953/54 a shrimp freezing firm owned jointly by a United States firm and Pakistan nationals was started. This firm exported 5,000 pounds of frozen shrimp to the United States in 1955. The machinery for a second plant has arrived and will be set up on the new fish harbor now under construction. In addition a small canning plant was established in 1954 and it is now canning about 200 to 500 pounds a day. Efforts are being made to expand the output of canned shrimp.

No taxes are levied on foreign firms and foreign investors are allowed to invest as much as 60 percent of the total investment.

The estimated Pakistan shrimp catch was 10,930 metric tons in 1954, 13,925 in 1953, and 15,479 tons in 1952. The catch is made up of the species indicated in table.

Species	Percent of Catch
Peneus indicus	50-55
Metapeneus sp.	15-20
Peneus marguensis	10-15
Peneus semisulcatus ...	10-15
Perapeneopsis sp.	5

The present trend of the shrimp fishery in Pakistan is that the abundance is much larger than present catches would indicate, according to a January 18 dispatch from the United States Embassy in Karachi.

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SECOND SHIPMENT OF SHRIMP TO UNITED STATES: It was announced the latter part of February 1956 that a shipment of frozen shrimp totaling 20,000 pounds left Karachi, Pakistan, for the United States. This is the second shipment to the United States made by a company which started operations last year with United States capital participation, a February 24 United States Embassy dispatch from Karachi announces.

Note: Also see Commercial Fisheries Review, September 1955, p. 107.

Republic of the Philippines

SHRIMP FISHERIES: The catch of shrimp in the Philippines amounted to 2,641 metric tons (valued at US$2.0 million) in 1954, compared with 1,618 tons in 1953, and 1,311 tons in 1952. Exports are confined to small salted shrimp ("bangoong alamang") and varied in quantity between 1,300 pounds in 1952 and 16,700 pounds in 1954; in 1955 exports totaled 13,100 pounds. Salted shrimp are considered a delicacy by the Filipino residents in Guam and Hawaii.

The shrimp fishery in the Philippines is not specialized as in the United States. Shrimp are caught along with other varieties of fish by beam or otter trawls fished by motorized sampan-type wooden vessels, a United States dispatch dated January 11 from Manila states. The principal fishing grounds, with yields of 50 metric tons or over, are located in Carigara Bay, Guimaras Strait, Manila Bay, Magueda Bay, Samar Sea, San Miguel Bay, Sulu Sea, and Visayan Sea. There are no shrimp canneries and there is only one commercial freezer, located in Manila.

The principal species of shrimp are as follows: Peneaus indicus (Milne-Edwards); P. canaliculatus (Olivier); P. affinis (Milne-Edwards); P. incisipes (Spence-Bate); and P. monodon (Fabricius). The sizes (heads-on) vary between 4 and over 100 to the pound.

The shrimp fisheries do not receive governmental assistance and there are no foreign vessels engaged in this fishery. Licenses to operate fishing vessels, subject to taxation, are issued to United States citizens on the same basis as to citizens of the Philippines.

The greatest potentialities for expansion of the shrimp catch is the cultivation of shrimp in fishponds. The shrimp, P. monodon, is now being cultivated in Philippine estuarine fishponds together with small varieties of shrimp and milkfish (Chanos chanos). P. monodon is considered to be a delicacy and commands the highest prices in the markets. The abundant supply of immature P. monodon found all over the Philippines where milkfish fry are caught makes the development of pond rearing of shrimp a promising enterprise.

Portugal

CANNED FISH PACK, JANUARY-AUGUST 1955: The pack of canned sardines in oil or sauce for January-August 1955 amounted to 13,417 metric tons (net weight). The August 1955 pack was 4,105 tons as compared with 5,592 tons in August 1954.

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CANNED FISH EXPORTS, JANUARY-OCTOBER 1955: Portuguese canned fish exports totaled 7,931 metric tons (417,400 cases), valued at US$3.6 million, during October 1955; and 50,702 tons, valued at US$25.3 million, during January-October 1955.

Portuguese Canned Fish Pack, Jan.-Aug. 1955

Product	Net Weight	Canner's Value
	Metric Tons	1,000 US$
Sardines in brine	633	96
Sardines in olive oil or sauce	13,417	7,453
Sardinelike fish in brine	1,605	482
Sardinelike fish in oil	2,552	1,404
Anchovies, rolled & fillets	924	982
Tuna in brine	89	33
Tuna in olive oil	796	653
Tunalike fish in olive oil	83	52
Other species (including shellfish)	522	276
Total	20,601	11,431

Note: Values converted to US$ equivalent on the basis of 28.75 escudos equal US$1.

Portugal's export of canned fish in October 1955 maintained the high level of previous months, according to Conservas de Peixe, January 1955. During January-October 1955 Germany continued as the leading receiver with US$4.5 million of canned fish (about all sardines in oil), followed by Italy with US$4.1 million (principally sardines and tuna), Great Britain with US$3.5 million, and the United States with US$3.0 million (principally 2,692 tons of sardines in oil or sauce, 15 tons of tuna and tunalike fish in oil, and 1,469 tons of anchovies). Exports of canned fish to these 4 countries amounted to 57.1 percent of the total exports.

Portuguese Canned Fish Exports, October 1955 and Comparisons

Species	Oct. 1955		Jan.-Oct.-1955	
	Metric Tons	1,000 US$	Metric Tons	1,000 US$
Sardines in olive oil	6,781	2,920	40,744	19,511
Sardinelike fish in olive oil	439	394	3,924	2,709
Sardines & sardine-like fish in brine	237	50	1,732	345
Tuna & tunalike in olive oil	118	82	1,889	1,387
Tuna & tunalike in brine	31	17	576	292
Mackerel in olive oil	263	153	1,303	787
Other fish	62	27	534	286
Total	7,931	3,643	50,702	25,317

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FISHERIES TRENDS, OCTOBER 1955: Sardine Fishing: The catch of the Portuguese sardine fleet declined in October 1955 to 10,779 metric tons, or about 33 percent less than the September 1955 catch and only one-half of the catch of 21,965 tons reported for October 1954. The October 1955 sardine catch was valued at US$1.4 million ex-vessel as compared with US$1.7 million in September 1955.

The sardine canning industry absorbed 50 percent (5,368 tons) with the balance consumed fresh. The port of Matosinhos lead all others with a catch of 7,575 tons of sardines and contributed 4,181 tons (ex-vessel value US$587,860) to the canning trade.

Other Fishing: The landings of fish other than sardines totaled 1,924 tons, valued at US$95,500 ex-vessel. The catch of fish other than sardines was 95 percent chinchards (1,828 tons), followed by mackerel (44 tons), anchovy (30 tons), and tuna (21 tons), the January 1956 Conservas de Peixe reports.

Spain

VIGO FISHERIES TRENDS, DECEMBER 1955: Fishing: In December the fishing industry in the Vigo area of Spain regularly enters into the dull winter season. Activities were reduced and catches were down from the preceding month. Weather was variable and part of the time the smaller boats fishing nearby waters were in port. Catches of agujas or alcriques (needlefish), used as a substitute for sardines for local consumption, were relatively good as were those of jurel (horse mackerel) and pescadilla (small hake). Sardine catches off Portugal were fair for December but other catches were small, states a January 20 dispatch from the United States Consul at Vigo. The ex-vessel price for sardines was US$0.161 a pound as compared with about US$0.097 in December 1954.

Fish Canning: The canning industry processed needlefish and available sardines and anchovies during the month, but worked at far below capacity. Since the canning industry is dependent upon the fishing industry, it is also entering on a slack period which will last until March or April. During the month the canning industry took only 1.4 million pounds or about 16 percent of the total catch, as compared with 3.7 million pounds (30 percent of the total catch) in November 1955 and 3.2 million pounds (18 percent of the total catch) in December 1954.

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NEW TYPE COD FISHING VESSEL: A new type of Spanish fishing vessel for the cod fishery off Newfoundland is being constructed in a Portuguese shipyard, according to Dansk Fiskeritidende (February 10, 1956), a Danish trade paper. While the vessel is to be only 33 feet longer than the usual German or English distant-water trawler, it will carry a crew of 96. A 830 hp. motor will give the vessel a speed of 10.5 knots. Freezing equipment and a liver-oil plant will be installed forward. Eleven dories will be carried for line-fishing, and also two aluminum motor lifeboats. The motor lifeboats will tow the dories to the fishing grounds and transport the catch back to the mothership which, meanwhile, will be otter-trawling in suitable areas nearby.

Union of South Africa

FISH FLOUR EXPERIMENTS COMPLETED: The experiment on the manufacture of an odorless and nonfish-tasting flour made by the Fishing Industry Research Institute, Cape Town, to be used in bread and corn meal have been finished and the product has proved excellent, according to the Director of the Institute. The Institute is now endeavoring to perfect its product and reduce the cost so that it could be made on a commercial scale, states a February 7 dispatch from the United States Consul General in Cape Town.

The Institute's Director states: "It is a simple matter to reduce the odor and taste of fish, but only extensive research has made it possible to do this as well as retaining the fish protein in a digestible form. South Africa's main food scarcity is protein, and the addition of fish flour to bread not only means an increase in protein in the bread but enhances the biological value of the protein already in it."

It was also reported that the Institute has been requested by the Department of Nutrition of the Union's Ministry of Health to produce small quantities of fish flour for commercial- or consumer-acceptability tests to be carried out by that Department. These tests will get under way in the present fishing season as soon as enough maasbankers (Trachurus trachurus) are caught to provide 50 tons for processing into flour and subsequently bread and corn meal.

Note: Also Commercial Fisheries Review, March 1956, pp. 48-49.

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JACK MACKEREL CATCH LOW IN JANUARY-FEBRUARY 1956: Jack mackerel (maasbanker) catches in January and February 1956 off the South African west coast have been well below catches in previous years and are said to have hit a record low. It is estimated by reliable sources here that the value of these catches will be about US$168,000 and US$350,000 less than the value of catches during the same months in 1955 and 1954, respectively.

According to unofficial figures supplied the Director of Fisheries in Cape Town by fish factories on the South African west coast, only about 2,000 metric tons of fish were landed in January this year as compared to 4,700 tons in January 1955 and 25,000 tons in January 1954.

Indications are that catches in February 1956 will not be much better than those of the previous month. During February 1955 15,000 tons of jack mackerel reportedly were landed; in February two years ago, 17,500 tons.

The jack mackerel is South Africa's principal fishery at this time of the year, there has been considerable concern in the Union's fishing industry over the unexpected and rather unusual drop in catches of this fish during January and February.

The Secretary of the South African Fish Canners' Association in Cape Town considers the shortage of jack mackerel this year as "terrific" and stated that in his opinion the Union's 1956 jack mackerel catch "might just as well be written off the books." He added however, that fortunately there was an abundance in Union waters of small-size jack mackerel which would be harvested January, February, and March 1957.

It is understood also from the Secretary of the South African Fish Canners' Association that the Food Canning Workers' Union in Cape Town has requested the assistance of his organization in effecting the establishment of a provident fund for the benefit of unemployed cannery workers here in slack seasons or in times of abnormal unemployment, such as in the present case. The Union has proposed that this fund be established by joint contributions of employers and employees and that it be administered by a joint committee representing the interests of both employers and the Union. According to the Secretary of the Food Canning Workers' Union, social security benefits of some type are needed urgently by cannery workers in the Union as the fish industry, because of its very nature, cannot offer such workers full-time employment throughout the year.

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LOW DOMESTIC FISH MEAL PRICE HURTS BYPRODUCTS INDUSTRY: One of the problems of the Union of South Africa's huge fish-meal industry has nothing to do with the availability of fish or with the demand for its products. For years a Government regulation has forced it to meet demand from South African farmers at a fixed price which today is about half the price paid for the same meal on world markets. The industry would not object to selling on the local market and to meeting local demand at a reasonable price.

The industry last year produced more than 92,000 metric tons of meal of which about 40,000 tons had to be sold in the Union and South-West Africa at only US$84 a ton. Thus a vital animal feed is made available to farmers at a price little higher than for the average fertilizer.

The fishing industry regards this price as completely unrealistic. It was bad enough when exported meal was earning about US$140 a ton. The present price overseas is high and the demand is apparently unlimited, The South African Shipping News and Fishing Industry Review of January 1956 points out.

The industry now covers local needs first, supplying all the white-fish meal and fish meal required by Union farmers for supplementing stock feeds. But this service is performed at what the industry must regard as sub-economic prices for its meal. While farmers, already heavily subsidized, are earning good prices for their produce, the fishing industry has to subsidize them further by selling them its fish meal at a price far below that obtaining on world markets, the industry members point out.

Fish meal is produced by 13 factories on the Cape west coast and by 6 factories in South-West Africa and its sale and distribution is well organized on a pool system by the South African Fish Meal Producers' Association (Pty.) Ltd.

Under this system the Association is the selling channel functioning as a manufacturers' cooperative. Producers receive the average of the home market and export prices less costs, and the flow of the meal abroad is facilitated by selling most of the output of Union factories in South Africa and exporting the meal from the Walvis Bay factories.

Unfortunately, while this simplifies the problem of distribution, it does create a shipping problem for the Association. Because of inadequate facilities at the port of Walvis Bay, ships tend to avoid it and it is difficult at times to find space for exports.

U.S.S.R.

REGULATION OF PACIFIC SALMON FISHING PLANNED: Further measures have been taken by Soviet Russia to protect the salmon resources in certain international waters of the North Pacific. The intention to regulate and control salmon fishing was announced in a radio broadcast from Moscow on February 10, 1956. Another unofficial radio announcement on March 21 stated that salmon fishing in the area of the entire Okhotsk Sea, the western portion of the Bering Sea, and the Northwest Pacific will be restricted between May 15 and September 15, 1956.

A ruling by the Soviet Council of Ministers declares that permits from the Soviet Ministry of Fisheries will be necessary before salmon can be taken from these waters. The measures are aimed at Japanese fishermen whose netting of salmon during the spawning season has been described by the Soviet press as a threat to the economy of Soviet Siberia. The ruling makes clear that it intends to regulate salmon fishing in the open sea, as well as in Soviet territorial waters, but does not affect the freedom of navigation in the areas concerned.

The regulations will restrict the catch to 50,000 tons or about 25 million fish. In addition to issuing permits, the Soviet authorities will inspect and control fishing in the area. The ruling makes clear that the ban on fishing would apply only until an agreement with the other countries concerned is reached for the protection of the salmon resources. Since Japan is the chief country concerned with this salmon fishery, an agreement would be difficult to reach because of the lack of diplomatic relations between Japan and Soviet Russia.

The Japanese fishing industry has made plans to send 19 fishing fleets to the North Pacific this year, an increase of five over the 1955 fleet. Tentative plans have been made for a catch target of 100 million salmon and trout. The target for red salmon alone was set at 30 million fish.

The Japanese fishing industry is alarmed at the proposed regulations and it may be necessary for the Japanese Government to grant permission for the private fishing interests to negotiate with Soviet Russia.

United Kingdom

TRAWLERS USE "GROUP-OF-THREE" SYSTEM TO IMPROVE QUALITY: Six British trawlers based at Milford Haven initiated a "shuttle" service in order that their catches will never be more than nine days old when landed. These vessels have been engaged in the normal "pair" fishing using the Spanish "pareja" system.

The "group-of-three" system has been used very successfully by Spanish fishing vessels, but the Milford Haven scheme will be the first time it has been introduced in Britain, according to the January 30 issue of The Fishing News, a British weekly periodical.

The Ministry of Agriculture and Fisheries is so impressed by the prospect of much fresher fish being landed that a special clause has been introduced into the

new White Fish Authority subsidy scheme. This will bring the "groups of three" boats into line with the bigger hake trawlers for subsidy purposes. At present they are classed under the North Sea fishing subsidy scheme.

The first two ships will go out to fish as a normal "pair." A week later, a third boat will sail to "relieve" one of the original pair, to which all the fish then caught by the "pair" will be transferred. The relieved ship will bring the total catch back to port and the other two ships will continue fishing until the second vessel is relieved a week later by the ship that originally returned to port. By this method catches which up till now have been landed after a 14- to 16-day "pair" trip will now be brought back every week by the third trawler.

In practice, as far as the crews are concerned, the "group-of-three" system will mean a minimum of three days ashore every 17-18 days. If a "pair" sail on a Thursday, fishing would normally commence on Saturday morning. The ship to be relieved leaves the grounds for home on the following Friday night to land for Monday's market. Her crew would then be ashore until Thursday morning. The third ship which has to be "on station" ready for Saturday morning's fishing operations, would have left Milford on the previous Thursday morning to rendezvous with the second ship on the fishing grounds. Thus a continuous "shuttle" service will be maintained and crews will get longer time ashore between voyages.

The main object of the "group-of-three" plan is to bring in fish, and hake in particular, in better, fresher condition and to maintain a regular fishing "cycle" and steadier supplies.

Milford Haven has led Britain's fishing industry in the introduction of the "pair" fishing system, which has in the past given the port some of its highest-yielding hake trips.

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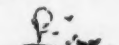
WHALING INDUSTRY REGULATIONS AMENDED: Recent changes in the Whaling Industry Act revoke and re-enact with amendments the 1953-55 Regulations, and give effect to certain resolutions of the International Whaling Commission. The principal changes are:

"1. Prohibiting the killing of blue whales in the Antarctic before February 1 in any year..."

"2. Reducing to 15,000 the total number of blue whale units that may be taken in any year in waters south of 40 degrees south latitude by catchers attached to factoryships of the powers bound by the resolutions of the Commission;

"3. Requiring the return of daily statistics of whales taken after the catch is deemed by the Bureau of International Whaling Statistics to have reached 13,500 whale units."



Venezuela

TUNA SHIPPED TO THE UNITED STATES: Between 70 and 80 metric tons of frozen tuna caught in the Caribbean Sea off Venezuela by the Japanese long-liner Bozo Maru will be transshiped to New York, according to a report by the Venezuelan administrator of the Customs at Guanta. This report appeared in the February 16 issue of El Nacional.

The Japanese long-liner, said to be commissioned by the Japanese Ministry of Agriculture and Forests, is supervised by Dr. G. Shinsuke Itoh. The vessel, which has been operating off the Venezuelan island of La Blanquilla for several months, is reported owned by a Venezuelan national.

Dr. Shinsuke is reported to have stated that the size of Venezuelan tuna is equalled only by those off the North African coast. Fish of 90 pounds each are common and those of 100 to 130 pounds each are not rare. He expects a catch of 400 tons monthly.

Fresh tuna has been offered on the Caracas market but has found few buyers, a February 16 United States Embassy dispatch from Caracas states. Few in Venezuela are familiar with other than canned tuna.

* * * * *

USE OF SARDINES FOR REDUCTION PROTESTED: Recently a well-known fish canner and spokesman for the Venezuelan fishing industry protested publicly to the Venezuelan Government regarding the use of sardines for the manufacture of fish meal. He claims that the sardines that inhabit the Gulf of Cariaco are needed by the canners for human food and for employment of many Venezuelan workers, a March 1 dispatch from the United States Embassy in Caracas states.

COOPERATIVE WILDLIFE RESEARCH UNIT SCHOOLS BESTOW 2,373 DEGREES

A total of 17 colleges affiliated with the Cooperative Wildlife Research Program have bestowed 2,373 degrees upon wildlife students since the program started in 1935, Acting Secretary of the Interior Clarence A. Davis said March 23. Compilations recently made by the Fish and Wildlife Service show that there were 186 degrees issued by these colleges and universities in the school year 1954-55. Of these, eight were doctorates, 63 master's degrees, and the rest bachelor degrees.

The Cooperative Unit Program is sponsored jointly by the Fish and Wildlife Service, the State conservation departments and land grant colleges of 15 States and Alaska, and the Wildlife Management Institute. Each unit has a minimum budget of $18,000 a year for salaries and facilities.

The primary purposes of the cooperative program are to encourage the training of personnel for wildlife management; to conduct wildlife research; and to promote wildlife education.

During the calendar year 1955 there were 275 research programs conducted, of which 48 were concerned with migratory waterfowl, 49 with fisheries, and the others with studies of wildlife species, habitat, and management problems. There were 161 articles, ranging from leaflets to books, prepared and published by unit personnel.

Of the 186 who received degrees in 1955, 82 have wildlife jobs with Federal, State and private organizations; 44 have entered the armed forces; 36 have returned to school for advanced training; and 24 are in occupations other than wildlife work.

Forty-eight of the 71 students who received advanced training last year obtained financial assistance in the form of fellowships, scholarships, or field expenses from the Cooperative Units. In addition, one-fifth of those who received bachelor degrees had financial support from the Cooperative Unit or used Unit equipment.

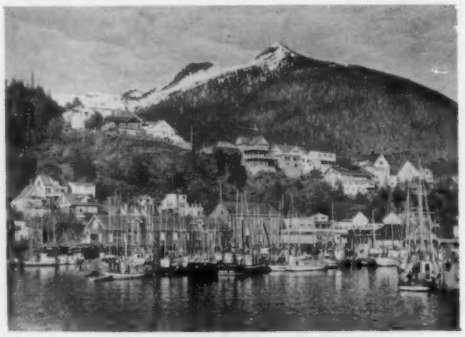
FEDERAL ACTIONS

Department of the Interior

FISH AND WILDLIFE SERVICE

ALASKA COMMERCIAL FISHING REGULATIONS REVISED:

Extensive revisions of the annual commercial fishing regulations for the 1956 season in Alaska were announced March 19 by the U. S. Department of the Interior. The regulations will be effective 30 days after publication in the Federal Register.



Salmon trollers off Ketchikan, Alaska.

Although most of the revisions were characterized by the Acting Secretary as "noncontroversial," he emphasized that five important changes will be in effect during the 1956 season. These he listed as follows:

1. Registration and limitation of fishing boats to one operating area to be selected by the operator;

2. Control of fishing on the high seas off the Alaska coast by United States nationals;

3. Limitation on the days per week of fishing in the Bristol Bay area, depending upon the number of units of gear operating;

4. Temporary closure during 1956 of 15 trap sites in the Prince William Sound area; and

5. Continuation during 1956 of the pink salmon restoration program in southeastern Alaska involving temporary closure of traps accounting for 50 percent of the trap catch of the area, and closure of extensive seine areas in the immediate vicinity of important salmon streams.

The last three changes which refer only to fishing in territorial waters are incorporated in the revised regulations announced March 19. At the same time the U. S. Fish and Wildlife Service issued a "notice of intention" concerning the other two items. This was done to put the industry and fishermen on notice that such regulations would be issued at a later date, to be effective in 1956. Since these changes represent radical departure from established procedures in regulating the Alaska commercial fisheries, more time is required by the Service for study and review before issuance.

The first of these new regulations--so-called "area licensing"--will deal with limitation as to place of operation by fishing boats in Alaskan waters. Although previously untested in Alaska, this has been under study for the past five years and has been discussed at public fisheries hearings in Alaska and Seattle, Wash. Authorities on fisheries management concede that area licensing offers the most promise in solving the problem of spreading the fishing effort so that the proper balance between escapement and catch is maintained.

The second proposed regulation, designed to control fishing by United States nationals on the high seas of the North Pacific Ocean and Bering Sea adjacent to Alaskan waters, awaits the consideration and approval of the American sec-

tion of the North Pacific Fisheries Commission. The Commission has requested such a regulation. The purpose of the regulation is to prevent development of an American high-seas salmon fishery which would intercept the Alaskan salmon runs before they reach waters now under regulation. It has been demonstrated that salmon can be taken in commercial quantities on the high seas to such an extent that protective measures imposed within territorial limits could be nullified.

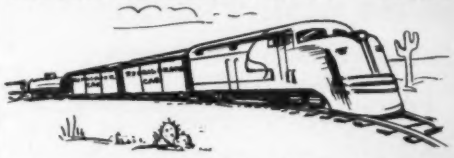
The proposed limitation on fishing time in Bristol Bay is somewhat different than it has been in the past. This year the U. S. Fish and Wildlife Service has included in the regulations a table showing the allowable number of days fishing each week with varying numbers of units of gear in operation. This will permit the operators to make more orderly plans for consolidation so as to tailor their operations to the number of fishing days per week they desire. The regulations will require registration of drift and set nets to be operated in each district 30 days before the fishing season opens by 6 p. m. Friday for the following week and each week thereafter.

Prince William Sound, which has been closed to pink salmon fishing for two years, will reopen this year. The operators have voluntarily offered to surrender 15 trap sites for 1956 which otherwise would be fished. Since this closure is in the interest of conservation and is similar, although less drastic than the trap-curtailment program in southeastern Alaska, it has been incorporated into the regulations for 1956.

The U. S. Fish and Wildlife Service reports that definite gains have been achieved by the restoration program imposed on the southeastern Alaska pink salmon fishery in 1954 and 1955. The spawning escapements in both years were better than in the parent years but still not adequate to restore the runs fully. There is almost unanimous agreement that the restoration program should be continued at least through 1956.

Interstate Commerce Commission

FREIGHT-RATE INCREASES GRANTED: The Interstate Commerce Commission granted another round of increases in freight rates in March 1956 to help the carriers meet increased wages and other operating costs. Early in 1956 the railroads filed a petition for a 7-percent increase and almost all other carriers



joined in the request. After hearings in the railroads' case, the I. C. C. granted a 6-percent increase in rail freight except for canned foods. The new rates for canned foods, including fish, were limited to a maximum of 6 cents a pound or about 3 to 4 percent.

Table 1 - Example of Freight Rates Per 100 Pounds of Fresh or Frozen Fish

	Before Increase	After Increase
Any Pacific Coast Railroad Terminal to New York City or Boston	$3.16	$3.35
Any Pacific Coast Railroad Terminal to Chicago	2.01	2.13

Shortly thereafter the I. C. C. permitted for certain areas west of the Mississippi River a truck rate increase of 6 percent to go into effect without hearings, although many protests were filed.

Table 2 - Example of Freight Rates Per 100 Pounds of Canned Fish

	Before Increase	After Increase
Any Pacific Coast Railroad Terminal to New York City or Boston	$1.76	$1.82
Any Pacific Coast Railroad Terminal to Chicago	1.49	1.55

The effective date of most of these increases was March 7. No increases were granted in carload refrigeration charges. Furthermore, the 15-percent increase in refrigeration charges recently granted the railroads, after a two-year fight, have not yet been published. Petitions have been filed with the I. C. C. seeking postponement and reconsideration of their decision.

The Railway Express Agency asked the Commission for a 7-percent increase effective March 20, but only for its first- and second-class rates. In addition, the increase would apply on return insulated containers and C.O.D. charges, effective April 2. No increase has been requested at this time on commodity-rate traffic, minimum charges therefor, or re-icing charges.

White House

CANNED TUNA IN BRINE IMPORT DUTY ADJUSTED:

An increase in the import duty of canned tuna in brine from 12½ percent to 25 percent ad valorem for such imports exceeding 20 percent of the previous year's United States pack of canned tuna is provided for in a Presidential proclamation signed March 16, 1956.

Canning tuna

The proclamation gives effect to an exchange of notes with Iceland which withdraws tuna canned in brine from the 1943 trade agreement with that country and to an invocation of the right reserved by the United States in the General Agreement on Tariffs and Trade to increase the duty on tuna canned in brine.

In any calendar year the increased duty would apply only to those imports in excess of the stated 20 percent and only for the remainder of that year. Imports in any year up to the 20-percent breakpoint would be subject to the 12½ percent ad valorem rate. Because the President's proclamation will become effective on April 14, 1956, it provides that the increased rate of duty will apply this year if and when imports of tuna canned in brine after the April 14 date exceed 15 percent of last year's domestic pack of canned tuna. The quantity of tuna canned in brine which may enter in 1956 after April 14 at the reduced rate of duty is estimated to be about 28,757,000 pounds.

In the 1955 trade agreement negotiations involving Japan's accession to the General Agreement on Tariffs and Trade, the United States agreed not to increase the existing rate of 12½ percent ad valorem applying to imports of tuna canned in brine, subject to the reservation of a right to impose a higher rate of duty on imports in any calendar year in excess of 20 percent of the domestic pack of canned tuna during the preceding year. This reservation has now been invoked.

Because annual imports of tuna canned in brine are not at present amounting to 20 percent of the domestic tuna pack, no immediate application of the increased duty will follow upon the President's action, a March 17 news release from the White House announces.

During the calendar year 1955, imports of tuna canned in brine totaled 34 million pounds. These imports were about 18 percent of the United States pack of canned tuna as reported by the U. S. Fish and Wildlife Service. The United States pack includes Puerto Rico and Hawaii, but excludes American Samoa.

In the 1943 trade agreement with Iceland, the United States reduced the duty on certain miscellaneous canned fish which were not packed in oil or in oil and other substances, dutiable under tariff paragraph 718(b) of the Tariff Act of 1930, as amended. This concession was intended primarily to cover certain specialty canned fish produced in Iceland. When tuna canned in brine became an article of trade, United States imports were classified under the item of Paragraph 718(b) subject to the reduced rate of the Icelandic agreement.

Tuna canned in brine is a relatively new product, its production being stimulated to take advantage of the lower rate of the Icelandic concession and particularly in response to the change in duty on tuna canned in oil from 22½ percent to 45 percent at the termination of the Mexican trade agreement effective Jan-

uary 1, 1951. There is very little domestic production of tuna canned in brine.

In the 1955 trade agreement negotiations with Japan and other countries under the General Agreement on Tariffs and Trade, the United States agreed not to increase the existing rate of 12½ percent ad valorem applying to imports of tuna canned in brine subject, however, to a reservation of the right to impose a higher rate of duty on imports in any year in excess of 20 percent of the previous year's domestic pack.

The withdrawal of this item from the Icelandic agreement in no way affects the concession granted on other fish items of primary interest to Iceland. United States imports of tuna canned in brine in 1955 came principally from Japan, other suppliers were Peru, Azores, Portugal, Angola.

TERMINATING IN PART THE ICELANDIC TRADE AGREEMENT PROCLAMATIONS AND SUPPLEMENTING PROCLAMATION NO. 3105 OF JULY 22, 1955

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

1. WHEREAS, under authority of section 350(a) of the Tariff Act of 1930, as amended, the President on August 27, 1943, entered into a trade agreement with the Regent of Iceland, including two schedules annexed thereto (57 Stat. 1076), and by proclamation of September 30, 1943 (57 Stat. 1075), he proclaimed the said trade agreement, which proclamation has been supplemented by proclamation of October 22, 1943 (57 Stat. 1098);

2. WHEREAS item 718(b) of Schedule II of the said trade agreement reads as follows:

"United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
"718(b)	Fish, prepared or preserved in any manner, when packed in air-tight containers weighing with their contents not more than fifteen pounds each (except fish packed in oil or in oil and other substances): "Any of the foregoing (except herring, smoked or kippered or in tomato sauce, packed in immediate containers weighing with their contents more than one pound each, and except salmon and anchovies)	12 1/2% ad valorem".

3. WHEREAS the Government of the United States and the Government of Iceland by an exchange of notes dated March 5 and 6, 1956, have agreed to the withdrawal, effective April 14, 1956, of tuna from said item 718(b), with the result that the said item shall thereafter read as follows:

United States Tariff Act of 1930 Paragraph	Description of Article	Rate of Duty
718(b)	Fish, prepared or preserved in any manner, when packed in airtight containers weighing with their contents not more than fifteen pounds each (except fish packed in oil or in oil and other substances; except herring, smoked or kippered or in tomato sauce, packed in immediate containers weighing with their contents more than one pound each; and except salmon, anchovies, and tuna)	12 1/2% ad valorem

4. WHEREAS, under the authority of the said section 350(a) of the Tariff Act of 1930, as amended, the President on June 8, 1955, entered into a trade agreement providing for the accession of Japan to the General Agreement on Tariffs and Trade, which trade agreement consists of the Protocol of Terms of Accession of Japan to the General Agreement, including Schedule XX contained in Annex A thereto, and by Proclamation No. 3105 of July 22, 1955 (20 F.R. 5379), he proclaimed the said trade agreement, which proclamation was supplemented by a notification of August 22, 1955 from the President to the Secretary of the Treasury (20 F.R. 6211);

5. WHEREAS item 718(b) in Part I of the said Schedule XX reads as follows:

"Tariff Act of 1930 paragraph	Description of Products	Rate of Duty
"718(b)	Fish, prepared or preserved in any manner, when packed in air-tight containers weighing with their contents not more than 15 pounds each (except fish packed in oil or in oil and other substances): "Tuna . . . . . "NOTE: The United States reserves the right to increase the rate of duty on fish of the foregoing description which are entered in any calendar year in excess of an aggregate quantity equal to 20 per centum of the United States pack of canned tuna fish during the immediately preceding calendar year, as reported by the United States Fish and Wildlife Service.";	12-1/2% ad val.

6. WHEREAS on March 16, 1956 the Government of the United States notified the Executive Secretary to the CONTRACTING PARTIES to the General Agreement on Tariffs and Trade that it invoked the reservation contained in the note to the said item 718(b) set forth in the fifth recital of this proclamation, effective April 14, 1956; and

7. WHEREAS the first general note to the said Schedule XX specified in the fourth recital of this proclamation provides that the provisions of that schedule are subject to the following general note to Schedule XX to the General Agreement on Tariffs and Trade, of October 30, 1947 (61 Stat. (pt. 5) A1362):

"4. If any tariff quota provided for in this Schedule, other than those provided for in items 771, becomes effective after the beginning of a period specified as the quota year, the quantity of the quota product entitled to enter under the quota during the unexpired portion of the quota year shall be the annual quota quantity less 1/12 thereof for each full calendar month that has expired in such period.";

NOW, THEREFORE, I, DWIGHT D. EISENHOWER, President of the United States of America, acting under and by virtue of the authority vested in me by the Constitution and the statutes, including the said section 350 of the Tariff Act of 1930, as amended, do proclaim as follows:

Part I

In accordance with the exchange of notes specified in the third recital of this proclamation, I hereby terminate in part the proclamations of September 30, 1943, and October 22, 1943, referred to in the first recital of this proclamation, insofar as such proclamations apply to tuna provided for in the said item 718(b) set forth in the second recital of this proclamation, such termination to be effective at the close of business on April 14, 1956, with the result that the rate of duty specified in the said item 718(b) shall thereafter apply only to the articles provided for in the said item as set forth in the third recital of this proclamation.

Part II

In accordance with the notification specified in the sixth recital of this proclamation I hereby terminate in part, effective at the close of business on April 14, 1956, the said proclamation of July 22, 1955, and the said notification of August 22, 1955, referred to in the fourth recital, insofar as such proclamation and notification apply to tuna provided for in the said item 718(b) set forth in the fifth recital which are entered, or withdrawn from warehouse, for consumption in the

calendar year 1956 after April 14, 1956 in excess of an aggregate quantity equal to 15 per centum of the United States pack of canned tuna during the calendar year 1955, as reported by the United States Fish and Wildlife Service, and in any calendar year after 1956 in excess of an aggregate quantity equal to 20 per centum of the United States pack of canned tuna fish during the immediately preceding calendar year, as so reported, with the result that such tuna in excess of such 15 or 20 per centum of the United States pack shall be dutiable at 25 per centum ad valorem, the full rate provided for in paragraph 716(b) of the Tariff Act of 1930 (46 Stat. (pt. 1) 633).

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this sixteenth day of March, in the year of our Lord nineteen hundred and fifty-six, and of the Independence of the United States of America the one hundred and eightieth.

DWIGHT D. EISENHOWER

By the President:

Herbert Hoover, Jr.

Acting Secretary of State.

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Eighty-Fourth Congress (Second Session)

Listed below are public bills and resolutions that directly or indirectly affect the fisheries and allied industries. Public bills and resolutions are shown when introduced; from month to month the more pertinent reports, hearings, or chamber actions on the bills shown are published; and if passed, they are shown when signed by the President.

GREAT LAKES FISHERIES TREATY: S. 3347 (Thye, Potter, and Wiley) introduced in the Senate March 14, a bill to give effect to the Convention on Great Lakes Fisheries signed at Washington, September 10, 1954, and for other purposes; to the Committee on Interstate and Foreign Commerce.

Also S. 3524 (Magnuson) introduced March 23; and H. R. 9951 (Bonner), H. R. 9958 (Davidson), H. R. 10,001 (Rabaut), all introduced March 15; all similar to S. 3347.

TRANSPORTATION TAX EXEMPTION FOR CERTAIN FISHERY PRODUCTS: H. R. 9912 (McCarthy) introduced in the House March 13, 1956; a bill to exempt certain livestock, fish (including shellfish), and agricultural commodities from the tax on the transportation of property. The bill does not include manufactured products.

TRADE COOPERATION ORGANIZATION: House Committee on Ways and Means on March 26 ordered favorably reported, with amendments H. R. 5550, authorizing the President to accept membership on behalf of the United States in the Organization for Trade Cooperation.

TRUCK TRIP LEASING: Senate March 28 passed with amendments S. 898, to amend the Interstate Commerce Act with respect to the authority of the ICC to regulate the use by motor carriers of motor vehicles not owned by them, after adopting committee amendments, one with an amendment by Senator Magnuson exempting from certain regulation farmers' or cooperatives' trucks which are used regularly in transportation of processed or manufactured perishable products. The amendment provides that the trip-leasing benefits are available to a private carrier whose truck is used "regularly in the transportation of processed or manufactured perishable commodities of the character referred to in section 203(b)(6)." Section 203(b)(6) is the section of the Interstate Commerce Act that interprets the term agricultural commodities and exempts agricultural products, including livestock, poultry, and fish. So the amendment would extend the benefits of trip leasing to private carriers who transport processed or manufactured perishable products from agricultural commodities, livestock, fish, or poultry. In other words, a private carrier who uses his equipment regularly to haul dressed poultry, dressed meat, milk, butter, fish or similar perishables processed or manufactured from agricultural commodities could trip lease home in accordance with the provisions of the bill. The Interstate Commerce Commission about 5 years ago indicated that it would not permit the practice of trip leasing to continue, and it issued order MC-43, which provided that as of a certain date trip leasing would not be permitted unless the person who trip leased his truck to a particular carrier did so for a period of 30 days or more. S. 898 sets aside this ICC order.

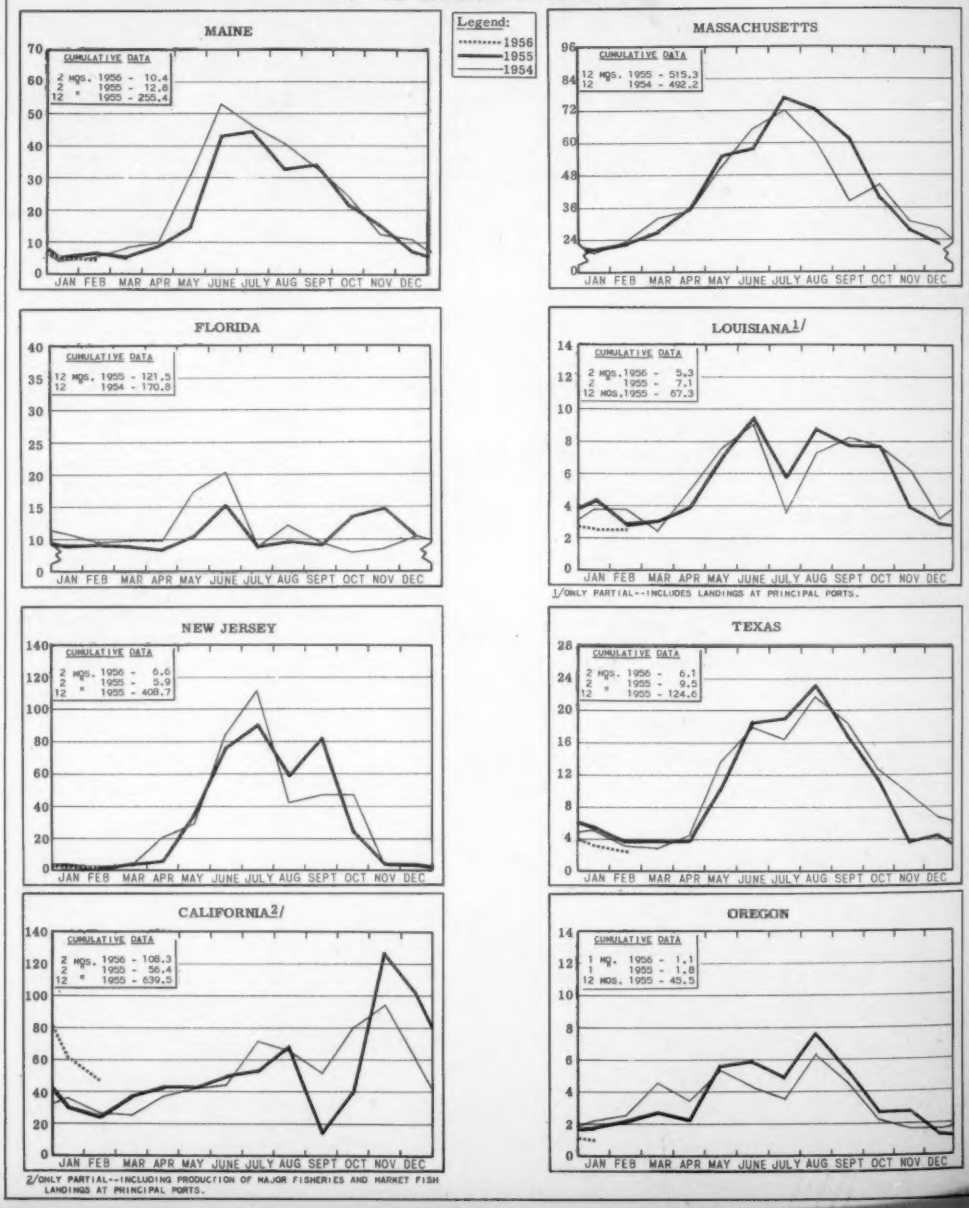
DRYING FISH BY INFRARED LAMPS

The Experimental Fisheries Station, Tateyama, Japan, has been using batteries of infrared lamps to dry fish at 40° to 45° C. (104°-113° F.). The drying takes two hours and can be accelerated by circulation of air. The final product is said to be free from odors produced by the conventional methods.

--Industria Conservera, April 1953.

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

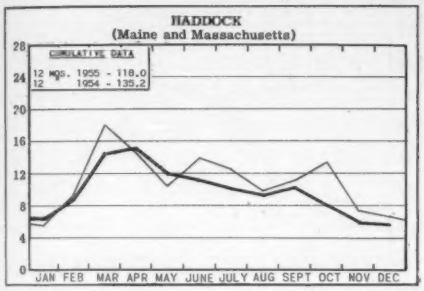


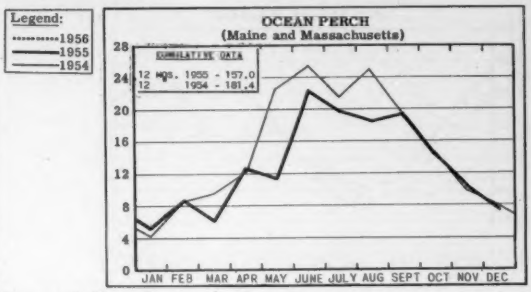
1/ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.

2/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

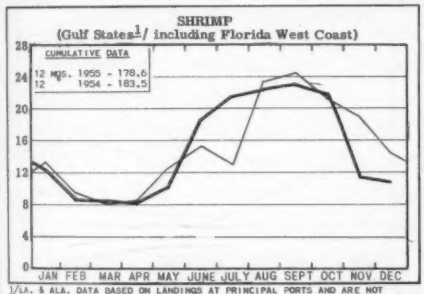
In Millions of Pounds

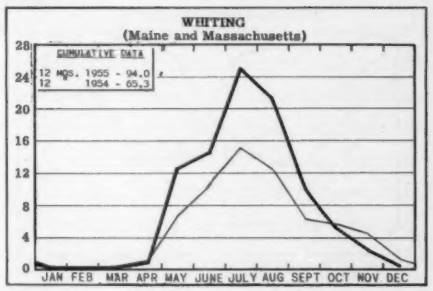

HADDOCK
(Maine and Massachusetts)
CUMULATIVE DATA
12 MOS. 1955 - 118.0
12 " 1954 - 135.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



OCEAN PERCH
(Maine and Massachusetts)
CUMULATIVE DATA
12 MOS. 1955 - 157.0
12 " 1954 - 181.4
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

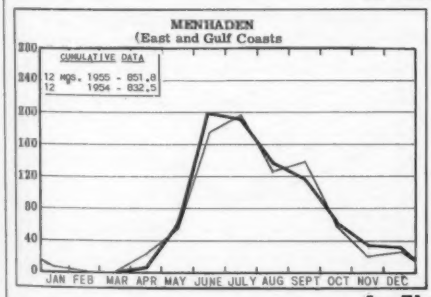
In Millions of Pounds

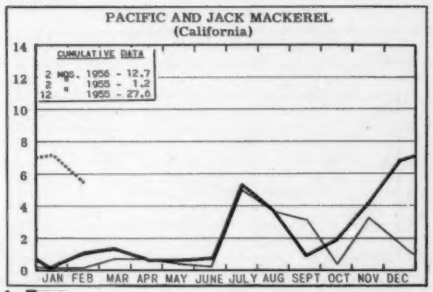

SHRIMP
(Gulf States1/ including Florida West Coast)
CUMULATIVE DATA
12 MOS. 1955 - 178.6
12 " 1954 - 183.5
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
12 MOS. 1955 - 94.0
12 " 1954 - 65.3
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

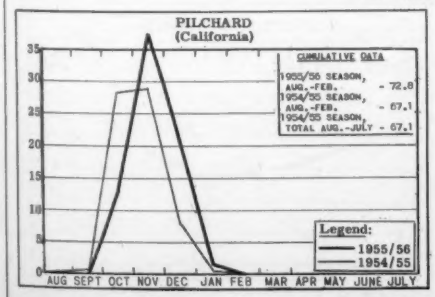
1/LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

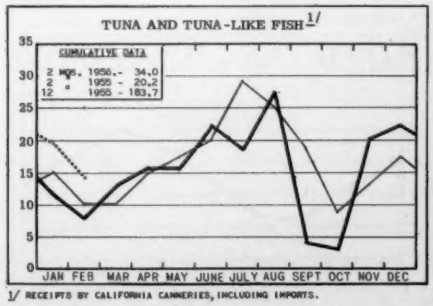
In Thousands of Tons


MENHADEN
(East and Gulf Coasts
CUMULATIVE DATA
12 MOS. 1955 - 851.8
12 " 1954 - 832.5
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
2 MOS. 1956 - 12.7
2 " 1955 - 1.2
12 " 1955 - 27.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons

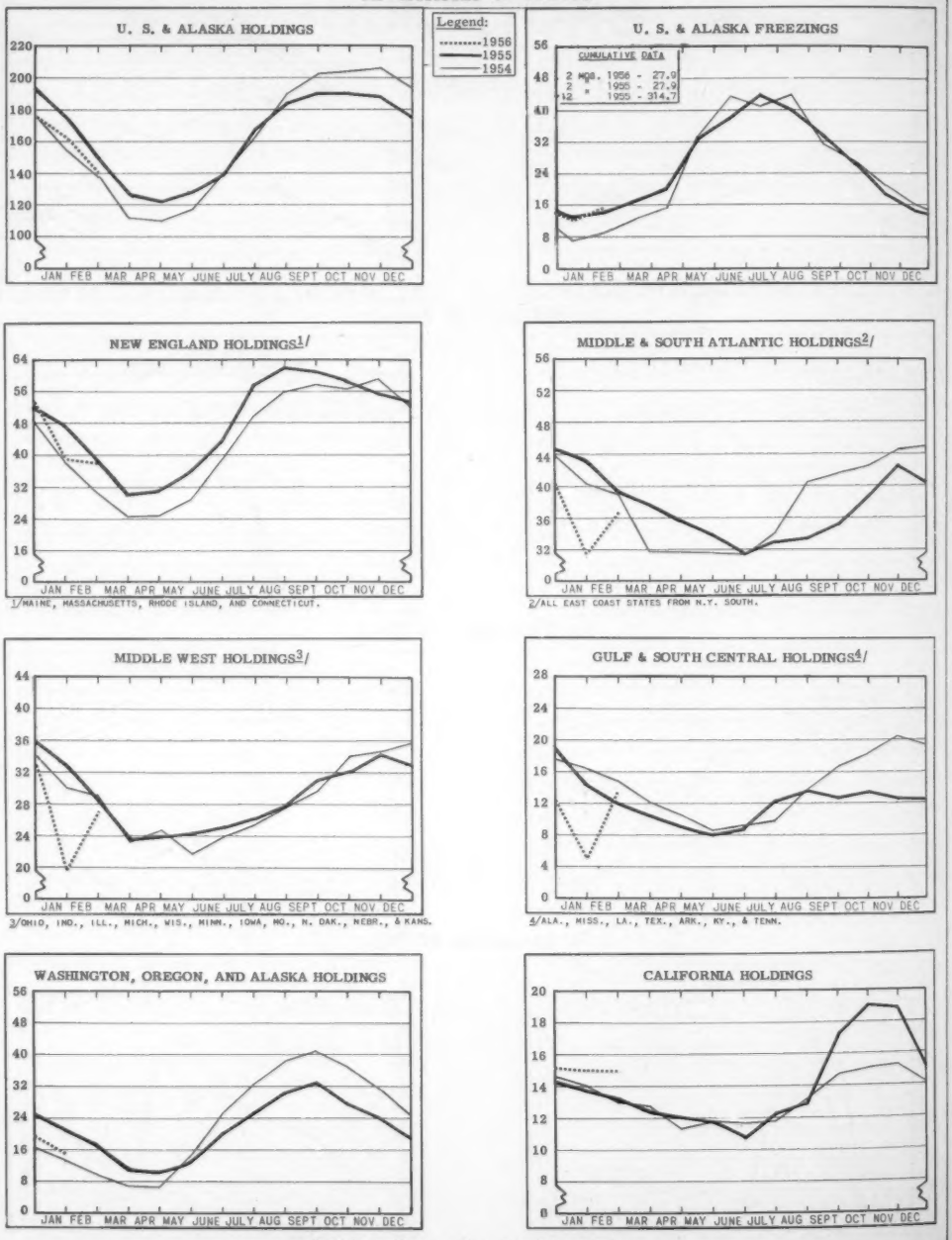



TUNA AND TUNA-LIKE FISH1/
CUMULATIVE DATA
2 MOS. 1956.- 34.0
2 " 1955 - 20.2
12 " 1955 - 183.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ RECEIPTS BY CALIFORNIA CANNERIES, INCLUDING IMPORTS.

CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds



1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.

2/ALL EAST COAST STATES FROM N.Y. SOUTH.

3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.

4/ALA., MISS., LA., TEX., ARK., KY., & TENN.

*Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

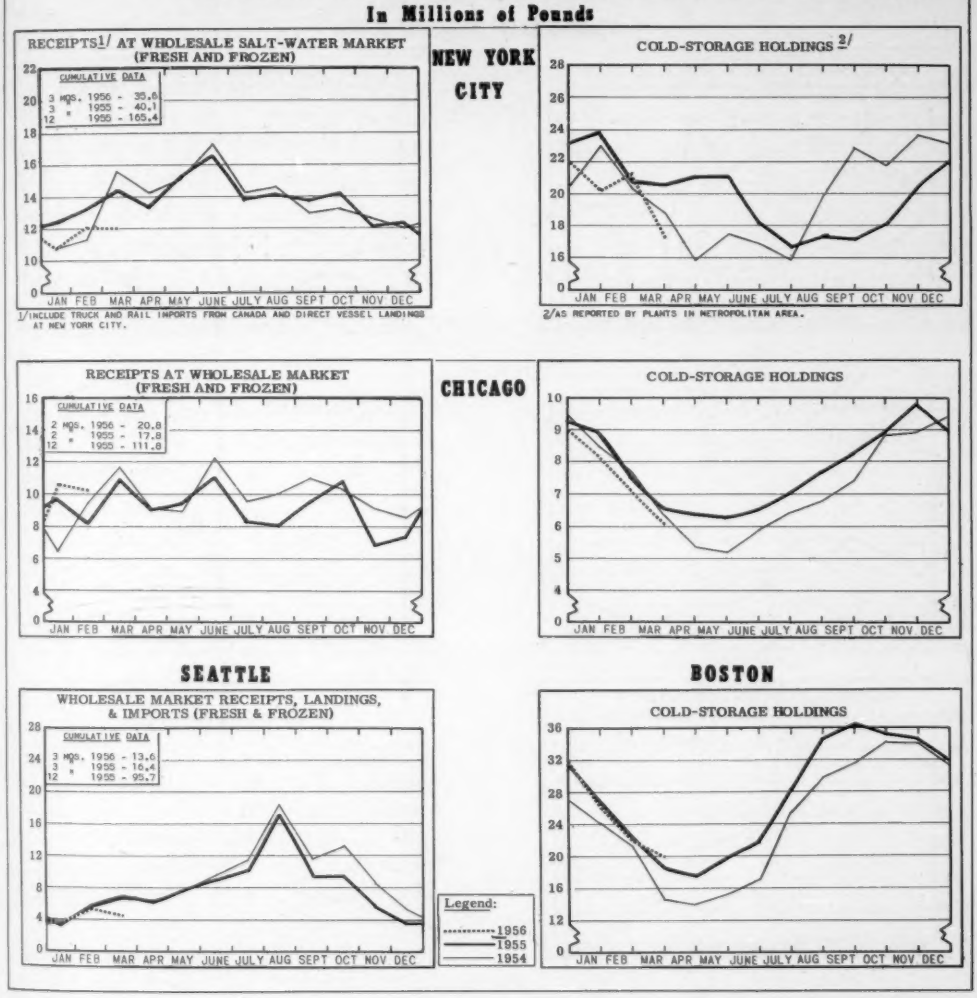

RECEIPTS 1/ AT WHOLESALE SALT-WATER MARKET (FRESH AND FROZEN)
CUMULATIVE DATA
2 MOS. 1956 - 35.6
3 " 1955 - 40.1
12 " 1955 - 165.4
NEW YORK CITY
COLD-STORAGE HOLDINGS 2/
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.
RECEIPTS AT WHOLESALE MARKET (FRESH AND FROZEN)
CUMULATIVE DATA
2 MOS. 1956 - 20.8
2 " 1955 - 17.8
12 " 1955 - 111.8
CHICAGO
COLD-STORAGE HOLDINGS
SEATTLE
WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (FRESH & FROZEN)
CUMULATIVE DATA
3 MOS. 1956 - 13.6
3 " 1955 - 16.4
12 " 1955 - 95.7
BOSTON
COLD-STORAGE HOLDINGS
Legend:
1956
1955
1954

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

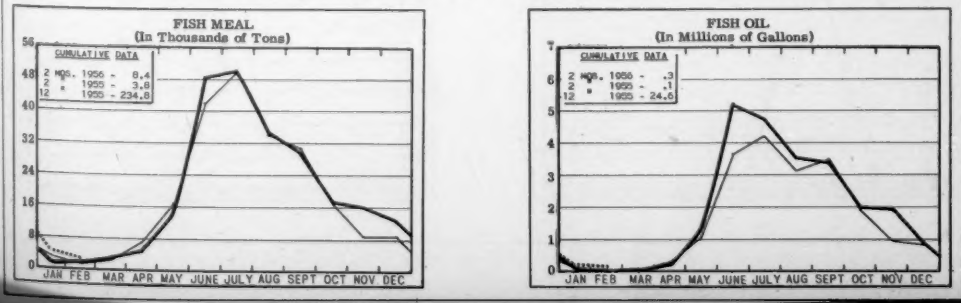
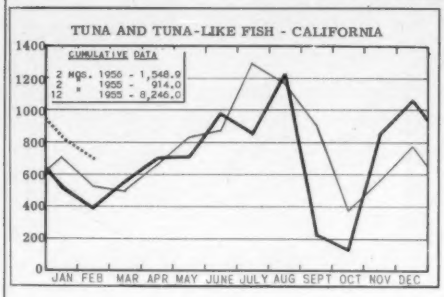
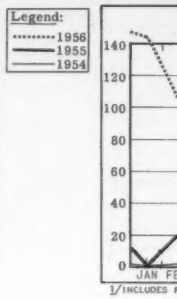
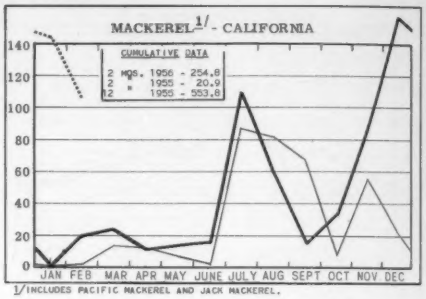

FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
2 MOS. 1956 - 8.4
2 " 1955 - 3.8
12 " 1955 - 234.8
FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
2 MOS. 1956 - .3
2 " 1955 - .1
12 " 1955 - 24.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

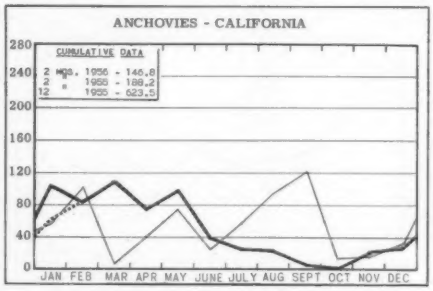
In Thousands of Standard Cases

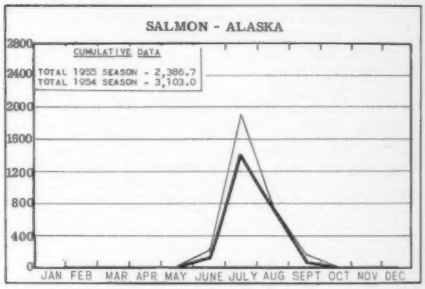

TUNA AND TUNA-LIKE FISH - CALIFORNIA
CUMULATIVE DATA
2 Mos. 1956 - 1,548.9
2 " 1955 - 914.0
12 " 1955 - 8,246.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

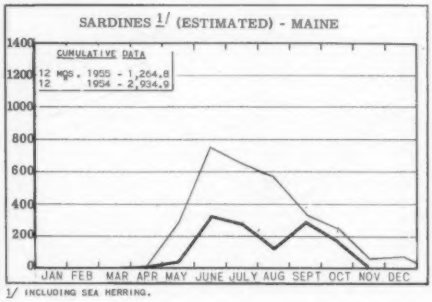



MACKEREL 1/ - CALIFORNIA
CUMULATIVE DATA
2 Mos. 1956 - 254.8
2 " 1955 - 20.9
12 " 1955 - 553.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.


ANCHOVIES - CALIFORNIA
CUMULATIVE DATA
2 Mos. 1956 - 146.8
2 " 1955 - 188.2
12 " 1955 - 623.5
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

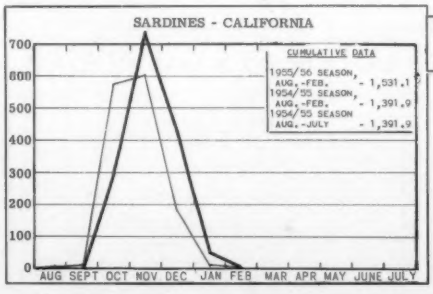

SALMON - ALASKA
CUMULATIVE DATA
TOTAL 1955 SEASON - 2,386.7
TOTAL 1954 SEASON - 3,103.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

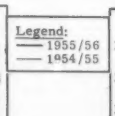

SARDINES 1/ (ESTIMATED) - MAINE
CUMULATIVE DATA
12 Mos. 1955 - 1,264.8
12 " 1954 - 2,934.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Can Designation	Net Wgt.
SARDINES	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA	48	No. ½ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	½ lb.	8 oz.


SARDINES - CALIFORNIA
CUMULATIVE DATA
1955/56 SEASON, AUG.-FEB. - 1,531.1
1954/55 SEASON, AUG.-FEB. - 1,391.9
1954/55 SEASON AUG.-JULY - 1,391.9
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY



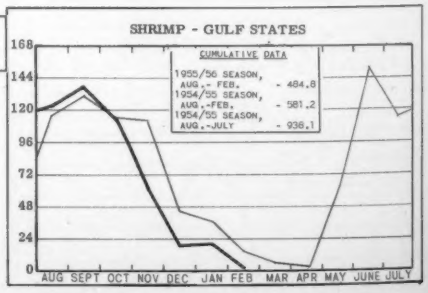
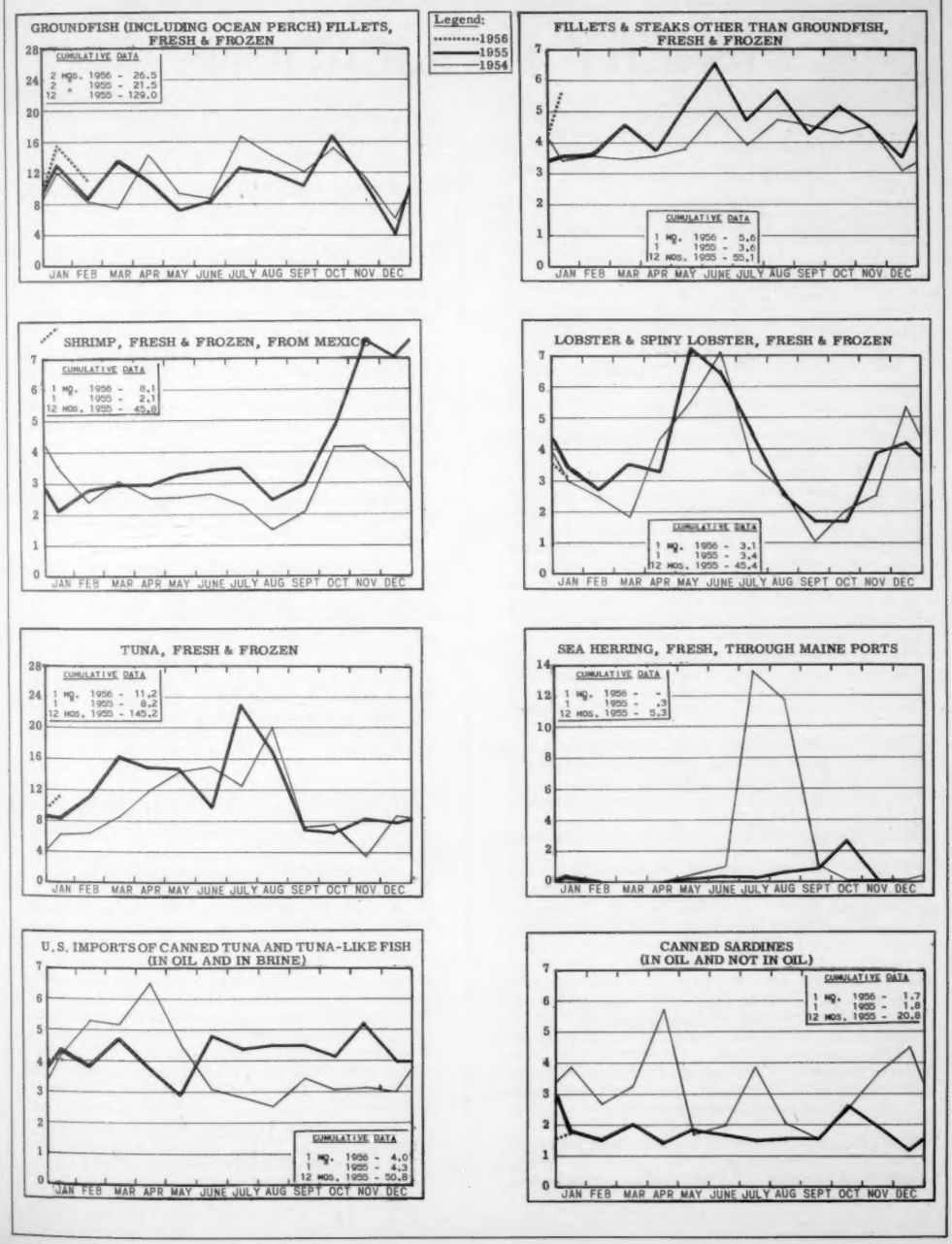

SHRIMP - GULF STATES
CUMULATIVE DATA
1955/56 SEASON, AUG.- FEB. - 484.8
1954/55 SEASON, AUG.-FEB. - 581.2
1954/55 SEASON, AUG.-JULY - 938.1
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (INCLUDING OCEAN PERCH) FILLETS, FRESH & FROZEN
CUMULATIVE DATA
2 MOS. 1956 - 26.5
2 " 1955 - 21.5
12 " 1955 - 129.0
Legend:
1956
1955
1954
FILLETS & STEAKS OTHER THAN GROUNDFISH, FRESH & FROZEN
CUMULATIVE DATA
1 MO. 1956 - 5.6
1 1955 - 3.6
12 MOS. 1955 - 55.1
SHRIMP, FRESH & FROZEN, FROM MEXICO
CUMULATIVE DATA
1 MO. 1956 - 8.1
1 1955 - 2.1
12 MOS. 1955 - 45.8
LOBSTER & SPINY LOBSTER, FRESH & FROZEN
CUMULATIVE DATA
1 MO. 1956 - 3.1
1 1955 - 3.4
12 MOS. 1955 - 45.4
TUNA, FRESH & FROZEN
CUMULATIVE DATA
1 MO. 1956 - 11.2
1 1955 - 8.2
12 MOS. 1955 - 145.2
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
1 MO. 1956 - -
1 1955 - .3
12 MOS. 1955 - 5.3
U.S. IMPORTS OF CANNED TUNA AND TUNA-LIKE FISH (IN OIL AND IN BRINE)
CUMULATIVE DATA
1 MO. 1956 - 4.0
1 1955 - 4.3
12 MOS. 1955 - 50.8
CANNED SARDINES (IN OIL AND NOT IN OIL)
CUMULATIVE DATA
1 MO. 1956 - 1.7
1 1955 - 1.8
12 MOS. 1955 - 20.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR. - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-1267 - Alabama Landings, November 1955, 2 pp.
CFS-1270 - New Jersey Landings, December 1955, 2 pp.
CFS-1272 - Frozen Fish Report, January 1956, 8 pp.
CFS-1273 - Massachusetts Landings, November 1955, 5 pp.
CFS-1274 - North Carolina Landings, December 1955, 2 pp.
CFS-1277 - Mississippi Landings, December 1955, 2 pp.
CFS-1278 - Fish Meal & Oil, January 1956, 2 pp.
CFS-1279 - New York Landings, December 1955, 4 pp.
CFS-1280 - Alabama Landings, December 1955, 2 pp.
CFS-1284 - Shrimp Landings, January 1956, 2 pp.
CFS-1285 - California Landings, October 1955, 4 pp.
CFS-1288 - North Carolina Landings, January 1956, 2 pp.
CFS-1289 - New Jersey Landings, January 1956, 2 pp.
CFS-1299 - Maine Landings, January 1956, 3 pp.
FL - 432 - Fishery Statistical Publications of the Fish & Wildlife Service, 20 pp.
SL - 162 - Firms Producing Fish Sticks, 1955 (Revised), 2 pp.

SSR-Fish. No. 166 - Studies on an Ichthyosporidium Infection in Fish: Transmission and Host Specificity, by Paul V. Gustafson and Robert R. Rucker, 10 pp., illus., processed, January 1956.

SSR-Fish. No. 167 - Passage of Fission Products through the Skin of Tuna, by Walter A. Chipman, 9 pp., processed, February 1956.

SSR-Fish. No. 168 - Mid-Pacific Oceanography Part IX, Operation NORPAC, by J. W. McGary and T. S. Austin, 134 pp., illus., processed, January 1956.

Sep. No. 434 - Condition of the Middle Atlantic Pound-Net Fishery.

Sep. No. 435 - School Lunch Fish-Cookery Demonstrations in Oklahoma.

Sport Fishery Abstracts, vol. 1, no. 3, Abstracts 315-446, 52 pp. processed, January 1956.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D.C.

Fishery Publication Index, 1920-54, Circular 36, 264 pp., processed, $1.50, 1955. This index describes the publications of the United States Bureau of Fisheries from 1920 to 1940 and fishery publications of the Fish and Wildlife Service from 1940 to 1954. The index is in three parts: (1) A serial list of the numbers issued in each publication series; (2) an alphabetical index of authors; and (3) an alphabetical index of subjects. A description of each publication series is also presented.

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

Boston Fishery Products Monthly Summary, January 1956, 16 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; and Boston frozen fishery products prices to primary wholesalers; for the month indicated.

Boston Fishery Products Monthly Summary, February 1956, 16 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.)

California Fishery Products Monthly Summary, January 1956, 11 pp. Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. California cannery receipts of raw tuna and tunalike fish, sardines, herring, and squid; pack of canned tuna, mackerel, sardines, herring, anchovies, and squid; market fish receipts at San Pedro, Santa Monica, Eureka, and San Diego areas; United States imports of fishery products into California and Arizona; cold-storage freezings and holdings of fishery products; canned fish and frozen shrimp prices at the primary or wholesale level; for the month indicated.

California Fishery Products Monthly Summary, February 1956, 10 pp. Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.

(Chicago) January 1956 Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Prices, 10 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces; fresh-water fish, shrimp, and frozen fillet wholesale market prices; for the month indicated.

(New York) Monthly Summary-December 1955 - Receipts of Fishery Products at the New York City Wholesale Salt-Water Fish Market, 5 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N.Y.) Receipts in the salt-water section of the Fulton Fish Market by species and by states and provinces for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, January 1956, 5 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp landings, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; and wholesale prices of fish and shellfish on the New Orleans French Market; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, February 1956, 5 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.)

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, February 1956, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, P. O. Box 447, Hampton, Va.) Fisheries production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

(Seattle) Monthly Summary - Fishery Products, February 1956, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 421 Bell St. Terminal, Seattle 1, Wash.) Includes landings and local receipts as reported by Seattle and Astoria (Oregon) wholesale dealers for the month indicated.

The Flounder and Industrial Fishery Project, Interim Report, 4 pp., illus., processed. (Available free from the U. S. Fishery Laboratory, Fish and Wildlife Service, Woods Hole, Mass.) A brief report on a study of the complex mixed industrial fishery at Pt. Judith, including information on the species composition of the industrial catch, catch in pounds per hour of industrial species, catch per hour of food fishes, and population data.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

Achievements of the Directorate of Fisheries, East Bengal in the Field of Fish Culture, 12 pp., illus., printed. Director of Fisheries, Government of East Bengal, Dacca, East Bengal, 1955.

Alabama Laws and Regulations Relating to Game, Fish, and Fur-Bearing Animals, Season 1954-1955, 146 pp., printed. Division of Game and Fish, Department of Conservation, Montgomery, Ala.

"Analysis of Phytoplankton Yields in Relation to Certain Physical and Chemical Factors of Lake Michigan," by Ruth E. Griffith, article, Ecology, vol. 36, no. 4, October 1955, pp. 543-552, illus., printed. Duke University Press, Box 6697, College Station, Durham, N. C.

British Columbia Catch Statistics, 1955 (By Area and Type of Gear), 137 pp., illus., processed. Department of Fisheries of Canada, 1110 West Georgia St., Vancouver 5, B.C. The fifth annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. Statistics are presented by species, months, gear, and area. This report is intended as a factual statement of catch and no attempt is made to explain the strength or absence of various runs or catches. However, a review of certain economic, weather, and conservation factors that have a bearing on catch are enumerated.

Boletin Cientifico, vol. II (1955), 175 pp., illus., printed. Compania Administradora del Guano, Lima, Peru. Articles deal principally with oceanography off the Chilean and Peruvian coasts and Peru's guano birds. One article discusses age and growth of the anchoveta, a bait fish.

Bulletin Officiel D'Information du Conseil Superieur de la Peche, Number 22, October-December 1955, 106 pp., illus., printed in French. Conseil Superieur de la Peche, 1 Avenue de Lowendal, Paris, France.

(Canada) Eighth Annual Report of the Fisheries Prices Support Board for the Year 1954-55, 10 pp., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1955. Describes the Fisheries Prices Support Act; economic conditions of the British Columbia, Atlantic Coast, and fresh-water fisheries;

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price support programs for bloaters and Atlantic Coast salted codfish; and research and other activities of the Board.

"The Coelacanth," by Jacques Millot, article, Scientific American, vol. 193, no. 6, December 1955, pp. 34-39, illus., printed, single copy 50 cents. Scientific American, 2 West 45th St., New York 36, N. Y.

"The Collapse and Recovery of a Small Whitefish Fishery," by Richard B. Miller, article, Journal of the Fisheries Research Board of Canada, vol. 13, no. 1, January 1956, pp. 135-146, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

(East Pakistan) Fish Wealth of East Pakistan, by Nazir Ahmad, 27 pp., illus., printed. Directorate of Fisheries, Government of East Bengal, Dacca, East Bengal. Describes the inland and marine fisheries of the Province of East Pakistan, fish culture, types of craft and gear used in the various fisheries, conditions of fish markets in East Bengal, and preservation and curing of fish.

(East Pakistan) Report on the Fish and Fisheries of East Pakistan, by Nazir Ahmad, 16 pp., illus., printed. Director of Fisheries, Government of East Bengal, Dacca, East Bengal, 1955. This report (for official use only) describes briefly the fishery resources of East Bengal, fish culture, methods of capture, and fishery problems and their solution.

(Ecuador) Primer Censo Nacional de Pescadores, 1954 (First National Census of Fishermen), by Censo Agropecuario Nacional por Muestreo (Coordinating and Supervisory Commission of the National Agricultural Census), 180 pp., illus., processed. Direccion General de Estadistica y Censos, Quito, Ecuador. The census of fishermen was prepared during 1954 and 1955 in cooperation with FAO experts and covers the entire seacoast of Ecuador, but excludes inland waters and the Galapagos Islands. Two basic questionnaires were used: (1) to ascertain information concerning fishing activities of individual families; and (2) to obtain information about species, prices, etc., within entire fishing communities. The results of the survey are summarized in 25 sets of tables and graphs, covering the number of family units engaged in fishing, types of vessels and implements used, time spent on expeditions, volume of catches, geographical distribution of "fishing zones," varieties of species found, seasonal variation in availability of each species, and sales in local and other markets. Figures are given by province, canton, and in some cases by community.

An Evaluation of Nine Types of Commercial Fishing Gear in Kentucky Lake, by Ellis R. Carter, article, Transactions of the Kentucky Academy of Science, vol. 15, no. 3, October 1954, pp. 56-80, printed. Kentucky Academy of Science, Lexington, Ky. During experimental use of nine types of commercial netting equipment, in five representative areas of Kentucky Lake, 36 species of fish were taken, of which 15 were game and pan fishes, 16 were commercial species and 5 were forage and trash fishes. Of the nine types of equipment, hoop nets are easiest to use and took predominantly commercial species. Wing nets took more fish, numerically, than any other type, but the catch was 82.07 percent game and pan fishes. Any of the seven barrel-type nets used were more successful when constructed with two throats. Gill nets were inefficient in mesh sizes over 3 inches, and were selective for game fish in mesh sizes under 3 inches. Trammel nets were slightly more successful in taking commercial species. Wire baskets took the smallest fishes; however, 75.30 percent were game fish. Wood baskets produced the lowest average return per unit of effort, but harvested 79.5 percent commercial fishes. Heart-lead nets caught a greater total poundage and also more pounds per net day than any other type. Lead nets were the second most successful type. Both, however, were rather selective for game fishes, which comprised 84.94 and 68.8 percent, respectively, of the poundage take of these nets.

L'Evolution de la Peche a Saint-Jean-de-Luz (Development of the Fisheries of Saint-Jean-de-Luz), by F. Doumenge, 12 pp., illus., printed in French. Centre Regional de la Productivite et des Etudes Economiques, Montpellier, France, 1955.

Fish for More Fishermen, 51 pp., illus., printed. Michigan Department of Conservation, Lansing 26, Mich. Principally for sport fishermen.

"The Fish Population of a Spring-Fed Swamp in the Mississippi Bottoms of Southern Illinois," by Gerald E. Gunning and William M. Lewis, article, Ecology, vol. 36, no. 4, October 1955, pp. 552-558, illus., printed. Duke University Press, Box 6697, College Station, Durham, N.C.

(Florida) Semi-Annual Report, 15 November 1954 to 15 May 1955 (A Technical Report to The Office of Naval Research), by Ilmo Hela, Lansing P. Wagner, and Frank Chew, Report 55-27, 75 pp., illus., processed. The Marine Laboratory, University of Miami, Coral Gables, Fla., September 1955. This progress report covers the oceanographic work performed under contract Nonr 840(01), known as Tropical Oceanography, from November 15, 1954 to May 15, 1955.

Follow the Whale, by Ivan T. Sanderson, 423 pp., illus., printed, $6. Little, Brown & Co., 34 Beacon St., Boston, Mass.

"Frozen Oysters," by Margaret L. Morton and W. J. Dyer, article, Journal of the Fisheries Research Board of Canada, vol. 13, no. 1, January 1956, pp. 47-51, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Quick-frozen freshly-shucked oysters stored at -10° F. (-23° C.) did not

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deteriorate significantly during a storage period of 9 months, as assessed by taste panels on the simmered oysters. Slow freezing and storage at higher temperatures resulted in a much greater loss in quality, and objectionable darkening occurred. Preparation as a stew largely masked this deterioration.

(Great Lakes) "The United States-Canadian Great Lakes Fisheries Convention," by Charles B. Selak, Jr., article, American Journal of International Law, vol. 50, no. 1, January 1956, pp. 122-129, printed. The American Society of International Law, Prince and Lemon Sts., Lancaster, Pa. Describes the organization and purpose of the United States-Canadian Great Lakes Fisheries Convention which was signed on September 10, 1954, and entered into force on the exchange of instruments of ratification on October 11, 1955. The purpose of this treaty is to secure through joint action the improvement of Great Lakes fisheries which are of common concern to the contracting parties, and eventually to bring these fisheries to a condition of maximum sustained productivity. Present fishery research on the Great Lakes is conducted by eleven separate agencies. The convention provides for the coordination of these efforts by one activity, the Great Lakes Fishery Commission, so that greater accomplishments can be made to eradicate the sea lamprey--the most serious known cause of the depletion of Great Lakes fisheries.

Grimsby--The World's Premier Fishing Port, 107 pp., illus., printed. Grimsby Trawler Owners' Association, Fish Dock Rd., Grimsby, England. A brief history of the fishing port of Grimsby and the years of development. Also includes chapters on the fishermen of Grimsby, Grimsby Trawler Owners' Association, the fishing industry and how it works, Grimsby processing techniques, sales by auction, ship repairing and engineering, ancillary trades, coal and oil bunkering, British cod-liver oil, the work of the White Fish Authority, scientific research, white-fish meal, training schemes, fish facts, and a plan of the docks at Grimsby.

Gulf States Marine Fisheries Commission Sixth Annual Report 1954-55 (to the Congress of the United States and to the Governors and Legislators of Alabama, Florida, Louisiana, Mississippi, and Texas), 23 pp., printed. Gulf States Marine Fisheries Commission, 312 Audubon Bldg., New Orleans 16, La. Contains the Commission's activities for the period October 1954-October 1955, with a summary of the principal decisions reached at the two regular sessions. Summarizes the principal activities and plans of the marine fishery administrations of the Gulf States in the interest of bringing about the proper utilization of the fishery resources. Included are short discussions of the U. S. Fish and Wildlife Service activities in technological and biological research and exploratory fishing in the Gulf area. A financial report of the Commission is included.

(International Council for Exploration of the Sea) Report of the Forty-third Meeting of the Council, 21 pp., printed. Conseil Permanent International Pour L'Exploration de la Mer, Charlottenlund Slot, Denmark, January 1956. An official report of the 43rd meeting of the International Council for the Exploration of the Sea, which was held in Copenhagen in October-November 1955.

(Iran) Basic Data on the Economy of Iran, Part I, Economic Report No. 55-108, 7 pp., printed, 10¢. Bureau of Foreign Commerce, World Trade Information Service, Washington, D. C. (For sale at the U. S. Government Printing Office, Washington 25, D. C., or the U. S. Department of Commerce Field Offices).

Lake Victoria Fisheries Service Annual Report, 1954/55 (covering the period January 1954 to July 1955), by J. D. Kelsall, 53 pp., illus., printed. East Africa High Commission, Nairobi, Kenya, 1955.

The Life in the Sea, by Ralph Buchsbaum, 101 pp., printed, $1.50. University of Oregon Press, Eugene, Oregon, 1955.

"The Limits of Swedish Territorial Waters," by Torsten Gihl, article, American Journal of International Law, vol. 50, no. 1, January 1956, pp. 120-122, printed. The American Society of International Law, Prince and Lemon Sts., Lancaster, Pa. The author comments on an article entitled "Historical Origins of the Three-Mile Limit," which appeared in vol. 48 of the American Journal of International Law (1954). He states, that "the history of the limits of Swedish territorial waters may be summarized as follows: (a) Originally the limit was defined by the range of vision; (b) In 1758 this limit was replaced by one of 12 or 18 nautical miles, which was considered equivalent to the range of vision; (c) For this limit was substituted in 1779 a four-mile limit, which has been retained ever since and is still in force. In Anglo-Saxon literature a breadth of territorial waters exceeding three nautical miles is sometimes regarded as an (possibly illegitimate) 'extension' of territorial waters beyond the three-mile limit that is characterized as normal. It may therefore be pointed out that the Swedish four-mile limit was in actual fact a reduction of the breadth of territorial waters that had formerly been in force. The Swedish four-mile limit is presumably of earlier date than any three-mile limit that has been officially fixed in any state."

"The Lipids of Fish: 6. The Lipids of Cod Flesh," by M. Dolores Garcia, J. A. Lovern, and June Olley, article, The Biochemical Journal, vol. 62, no. 1, January 1956, pp. 99-107, printed, 20s. (US$3.25) net per issue. Cambridge University Press, London, N.W. 1, England.

"The Lipids of Fish: 7. Phosphate Esters in the Lipids of Haddock and Cod Flesh," by June Olley, article, The Biochemical Journal, vol. 62, no. 1, January 1956, pp. 107-114, printed 20s. (US$3.25) net per issue. Cambridge University Press, London, N.W. 1, England.

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"Multiple Use of Salmon Rivers," article, Trade News, vol. 8, no 7, January 1956, pp. 10-11, 13, illus., printed. Department of Fisheries, Ottawa, Canada. Discusses the effects suggested power development in British Columbia would have on the fisheries. According to the article, "Even the most general survey indicates that in the full development of the Fraser for power as it is presently suggested and in spite of the provision of the best modern fish protection facilities, it is evident that: (1) the construction of a storage dam at the outlet of Babine Lake would practically destroy a valuable segment of the Skeena River sockeye fishery; and (2) the construction of four power dams on the main Fraser and six on the Thompson River would preclude the preservation and extension of the salmon and steelhead runs which normally proceed to areas above these dams. This conclusion is reached on the basis of the mortality to seaward migrant young salmon at a series of dams and of the delays in migration caused to the adults. In addition, the proposed development would create may other problems in relation to spawning grounds, stream and lake temperatures and general ecology, and fry migrations, which could seriously interfere with the maintenance of the fishery."

"Mortality of Oysters and Abundance of Certain Associates as Related to Salinity," by Gordon Gunter, article, Ecology, vol. 36, no. 4, October 1955, pp. 601-605, printed. Duke University Press, Box 6697, College Station, Durham, N. C.

"On the Methods Used by the Starfish (Pisaster ochraceus) in Opening Three Types of Bivalve Molluscs," by Howard M. Feder, article, Ecology, vol. 36, no. 4, October 1955, pp. 764-767, printed. Duke University Press, Box 6697, College Station, Durham, N. C.

The Philippine Journal of Fisheries, vol. 3, no. 1, January-June 1955, 96 pp., illus., printed. Office of Agricultural Information, Department of Agriculture and Natural Resources, Manila, Philippines, 1955. Contains the following articles: "The Basnig, a Bag Net for Pelagic Fishing in the Philippines," by Santos B. Rasalan and D. V. Villadolid; "A Preliminary Study on the Preservative Action of Furasukin and Mild Heat in Canning Bangos (Chanos chanos)," by Olympia B. Navarro and Jose I. Sulit; "Studies on the Preparation of Salted Fish Paste (Bagoong) from Dried Dilis (Stolephorus indicus)," by Claro Martin and Jose I. Sulit; "Studies on the Extraction of Alginic Acid from Some Species of Philippine Sargassum," by Jose I. Sulit and Regina C. San Juan; "A Report on the O:N:P: Ratios of Philippine and Adjacent Waters," by Teodoro G. Megia and Ricardo G. Lao; and "The Abuyan, an Improved Type of Goby Fishing Gear, used in Laguna de Bay, with Notes on the Composition of the Commercial Catches," by Santiago R. Capco and Porfirio R. Manacop.

Progress Report on the Economic Survey of Salmon Fishermen in British Columbia, 1953 and 1954, 6 pp., processed. Department of Fisheries, Ottawa, Canada, December 1955. Presents the major findings of surveys conducted by the Department of Fisheries on the economic activities of salmon fishermen in British Columbia for 1953 and 1954.

A Report of the Field Investigation on Poisonous and Venomous Fishes of Cocos and Galapagos Islands, by F. Douglas Horton and Chester C. Lindt, 13 pp., processed. School of Tropical and Preventive Medicine, College of Medical Evangelists, Loma Linda, Calif.

"A Resting Stage Without Encystment in the Annual Cycle of the Freshwater Copepod Cyclops strenuus strenuus," by Kaare Elgmork, article, Ecology, vol. 36, no. 4, October 1955, pp. 739-743, illus., printed. Duke University Press, Box 6697, College Station, Durham, N. C.

The Silver Mullet Fishery in South Florida, by H. P. Mefford, Report 55-34, 15 pp., illus., processed. The Marine Laboratory, University of Miami, Coral Gables, Fla., December 1955. The Florida regulations on mullet fishing refer generally to the black mullet, Mugil cephalus, and no separate consideration is given in them to the silver mullet. Considering the differences in the biology of the silver mullet and the black mullet separate regulations were considered as possibly necessary. An investigation was undertaken in order to consider the necessity of regulations for the silver mullet fishery, either those now applying to black mullet or separate regulations. Additional objectives were to describe the fishery, to define the spawning period, the size at maturity, the composition of the catch, and to outline the economic aspects of the fishery. According to the author, "Landings of silver mullet have steadily decreased since 1951. Production seems to be controlled mainly by market demand. Over 95 percent of the silver mullet production comes from south Florida. As in the black mullet fishery, gill nets and seines are the principal gears used to catch silver mullet. Three species of silver mullet, Mugil curema Cuvier and Valenciennes, Mugil trichodon Poey, and Mugil gaimardianus Desmarest are caught in Florida. The peak spawning period for Mugil curema is April through June. At a size of 225 mm. ($8\frac{7}{8}$ inches), 75 percent of the fish examined were mature. Of 1,786 fish examined, 51.4 percent were females and 48.6 percent males. At present there appears to be no necessity for the regulation of the silver mullet fishery either by the use of closed seasons or by minimum size mesh regulations. Regulations restricting the fishing for black mullet (Mugil cephalus) should specifically exclude silver mullet from these restrictions."

Sixth Annual Report of the Commonwealth Scientific and Industrial Research Organization for the Year Ending 30th June 1954, 179 pp., printed. Government Printing Office, Canberra, Australia, 1954.

"Spawning of the Sardine at a Definite Time of Day," by T. Gamulin and J. Hure, article, Nature,

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vol. 177, no. 4500, January 28, 1956, pp. 193-194, illus., printed. MacMillan & Co., Ltd., St. Martin's St., London, W.C. 2, England.

"Spoilage of Fish in the Vessels at Sea: 2. Treatment on the Deck and in the Hold," by C. H. Castell, W. A. MacCallum, and H. E. Power, article, Journal of the Fisheries Research Board of Canada, vol. 13, no. 1, January 1956, pp. 21-39, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. A study was made of some of the factors affecting the spoilage rate of fish in the trawlers at sea. It was found that two conditions were major causes of accelerated spoilage: (1) Treatments that resulted in very heavy initial contamination such as storing the fish directly against the slimy wooden pen boards; and (2) Treatments that resulted in a rise in the temperature of the fish. This latter may be a larger increase in temperature for a short period, such as exposure of the fish on the deck during warm summer weather, or a smaller increase over a longer period, such as results from inadequate or inefficient icing. Other types of carelessness and unsanitary conditions did not have any significant effect on the fish until at least 6 or 7 days, as long as they were well iced during the subsequent storage period in the hold.

"Storage of Frozen Plaice Fillets," by W. J. Dyer and Margaret L. Morton, article, Journal of the Fisheries Research Board of Canada, vol. 13, no. 1, January 1956, pp. 129-134, illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Taste panel assessments of taste, texture, and grade, and estimations of soluble actomyosin and of fat spoilage on plaice fillets after frozen storage at +10° F. (-12° C.) are reported. The plaice became unpalatable at 6 to 7 months as compared with 2 to 3 months for cod and about 8 months for Atlantic halibut at +10° F. Ascorbic acid was not effective in preventing lipid deterioration. A relationship between protein denaturation and the lipid content of the fish and its deterioration is suggested.

A Summer Study of the Biology and Ecology of East Bay, Texas. Part I. Introduction, Description of Area, Methods, Some Aspects of the Fish Community, the Invertebrate Fauna, by George K. Reid, Jr., 29 pp., illus., printed. (Reprinted from The Texas Journal of Science, vol. VII, no. 3, September, 1955, pp. 316-343.) Texas Game & Fish Commission, Austin 14, Tex.

A Summer Study of the Biology and Ecology of East Bay, Texas. Part II. The Fish Fauna of East Bay, The Gulf Beach, and Summary, by George K. Reid, Jr., 25 pp., printed. (Reprinted from The Texas Journal of Science, vol. VII, no. 4, December 1955, pp. 430-453.) Texas Game & Fish Commission, Austin 14, Tex.

Symposium on Marine and Fresh-Water Plankton in the Indo-Pacific (Held at Bangkok, Thailand, 25-26 January 1954), 111 pp., printed, $1. Indo-Pacific Fisheries Council, Bangkok, Thailand, 1954.

Technical Report of Fishing Boat, No. 6, 149 pp., illus., printed in Japanese with brief English abstracts. Fishing Boat Laboratory, Production Division, Fisheries Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyodaku, Tokyo, Japan, March 1955. Contains the following reports, with very brief abstracts in English, on various studies in progress at the Fishing Boat Laboratory: (1) "Experimental Results of Model Test and Actual Ship's Trial of the 'Seiwa-maru';" (2) "Strength Test of Laminated Beam Knees;" (3)"Wears of Cylinder, etc., of Fishing Boat Engine--V;" (4) "Automatic Net-Height Meter and Automatic Ground Rope Indicator for Trawler and Results of Experiments for these Apparatuses;" (5) "Propagation Characteristics of High Frequency Ultrasonics in Sea Water;" (6) "Reliability of Record for the Shape of Sea Bottom Obtained by Ultrasonic Echo-Sounder;" and (7) "Ultrasonic Reflection Loss of Fish Shoal and Characteristics of the Reflected Wave." An appendix lists the reports published in the past, Nos. 1-5.

(United Kingdom) Herring Industry Board, 20th Annual Report for the Year Ended 31st December 1954, Cmd. 9492, 40 pp., printed. Her Majesty's Stationery Office, London, England, 1955.

The Use of a Portable Depth Recorder for Locating Fish, by George F. Arata, Jr., Technical Series No. 15, 19 pp., illus., printed. The Marine Laboratory, University of Miami, Coral Gables, Fla., November 1955. A detailed description of the revised Bendix Model DR-10E-1 depth recorder is presented. A description of an outboard "fish" for towing the transducer is given. The results of this method of transducer mounting proved very satisfactory. Mechanical problems involving commutator interference are discussed. The recommended changes provided a model without serious operational disorders. Figures of traces positively identified as coming from the following species of fish are shown: Spanish mackerel (Scomberomorus maculatus), kingfish (Scomberomorus cavalla), bluefish (Pomatomus saltatrix), and barracuda (Sphyraena barracuda). Circumstantial evidence points to the following species also being responsible for traces: red grouper (Epenephelus morio), black grouper (Mycteroperca bonaci), and mutton snapper (Lutainus analis). The advantages of using this gear in sportfishing are explained. The author states that "It is also likely that the depth recorder could be very useful in the commercial fishery, where it could probably save time and money and allow more efficient utilization of fishing effort."

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TRADE LIST

The Office of Intelligence and Services, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D.C., has published the following mimeographed trade list. Copies of this list may be obtained by firms in the United States from that office or from Department of Commerce field offices at $2 each.

Oils (Animal, Fish and Vegetable) - Importers, Dealers, Producers, Refiners, and Exporters--Israel, 7 pages (February 1956). Lists the name and address, size of firm, and products handled by each firm. Includes a brief summary on 1954 domestic production and consumption from agricultural sources only and the 1954 imports of animal, fish, and vegetable oils. The total imports of fish-liver oils in 1954 was 250 metric tons, valued at US$200,304.

SQUID AND OCTOPUS AS FOOD

Squid are prized as food in some countries, especially those around the Mediterranean Sea. They are eaten only in relatively small quantities in this country. These animals are one of the most underexploited resources from the sea, for the reason that most people are too squeamish to eat such odd-looking creatures. They have an excellent flavor, tasting a little like clams, so their consumption will probably increase through the years. The Marine Laboratory of the University of Miami is doing research on squid and octopuses, and there is squid research going on in California as well. However, considering their potential value, very little work is in progress on these animals.

--Sea Secrets, The Marine Laboratory,
University of Miami,
Coral Gables, Fla.

Editorial Assistant--Ruth V. Keefe Illustrator--Gustaf T. Sundstrom

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"QUICKIE" MEALS WITH FISHERY PRODUCTS

Are you in doubt about what to serve for "quickie" lunches or dinners? The home economists of the U. S. Fish and Wildlife Service think you have a wide selection of easy-to-serve fish and shellfish specialty products or "quickies" to vary your luncheon or dinner menus.

How would you like a creamy shellfish soup for lunch or as an appetizer for dinner on one of these chilly spring days? Sounds like an expensive gourmet dish, doesn't it? But, it really isn't because you can obtain frozen clam chowder, cream of lobster or shrimp soup, oyster stew, and other varieties at your food markets at reasonable prices.

Shrimp and salmon steaks.

Combining vegetables with a protein food produces a dish that is not only fashionable but also delicious. For example, combine the ever-popular canned tuna with vegetables such as potatoes and peas and make attractive and delicious individual tuna pies.

Have you ever noticed how well fish and tomatoes go together? Very popular are the famous Creole dishes which formerly were dear only to the hearts of southerners. Now the wide distribution of frozen shrimp creole has brought this dish north of the Mason-Dixon line and introduced it to northerners as well.

If you are a connoisseur of Chinese foods, another good vegetable and protein combination is shrimp chow mein. Combine shrimp, celery, and bean sprouts and serve over toasted noodles.

Perhaps you are an epicurean with a taste for variety, then the shore dinners which take only minutes to prepare and serve, are a welcome suggestion for your dining pleasure.

Raw and fried fishery products, such as the phenomenally-popular fish sticks, are favorites with families throughout the Nation. The fishing industry has marketed a packaged precooked fish-stick dinner (containing macaroni, cheese, and peas) which only requires heating in the oven. Speaking of fish sticks, crab, oyster, and shrimp are now available in breaded sticks, either raw or french fried.

What is more appetizing than a french fried fish fillet for dinner? Outside, it is a crusty golden brown; inside, tender and juicy with all the delicate flavors sealed in.

Fish cakes, including cod cakes, have been a synonym for inexpensive, nutritious, and tasty food for generations. An old-fashioned food, perhaps, but new-fashioned methods have done away with any laborious preparations as they are all prepared, ready to heat and serve.

Other shellfish quickies, ready-to-cook, include deviled crabs and imperial crabs, lobster and lobsterettes, oysters, scallops, and the favorite of many, shrimp in various forms.